TECHNOLOGY DEPT.

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APPROACH

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DETROIT

THE NAVAL AVIATION SAFETY REVIEW

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approach

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Letters

Mission Accomplished

Sir:

Re: "Vertigo" (September, '58, APPROACH); white type on black coated stock guaranteed to induce visual vertigo as well as early blindness.

W. B. STUART-BULLOCK
McCann-Erickson Inc.,
New York City

● So sorry, inducing of early blindness was not intended.

'They Can Make It'

Sir:

The accident titled, "They Can Make It," in Truth and Consequences of the June issue does not reflect adequate cause factor determination by the investigating board. In the event that NASC has not changed the cause factors of this accident, I would like to point out the following:

1. Unless material failure and/or malfunction occurs, a condition does not normally constitute the primary cause of an accident. The actions taken by personnel when confronted with an adverse condition determine the primary cause.

2. Regardless of the seadrome conditions, the accident was not inevitable until the decision to land was made.

3. It is conceivable that even after the decision to land was made, if the second attempt at landing had been abandoned, the accident might have been avoided.

4. While flying through weather to reach an alternate is not pleasant, it is entirely feasible.

5. The information needed by the pilot was not that he could not be beached, but that he could not land without risking damage to his aircraft.

6. It appears that the usual dearth of qualified supervisory personnel between the hours of 1700 and 0800 existed.

The primary cause of this accident appears to be personnel error, either supervisory or pilot.

R. C. FRIEDERICHSEN
LCDR, USNR

● "Other personnel" error was listed as a secondary cause factor in the accident. The premise you put forth in "number 1" that a "condition other than material failure/malfunction can not be considered a primary cause" is not considered valid at NASC nor was it considered valid by the chain of endorsers commenting on the accident in question. The question of primary and secondary cause however, has been the subject of considerable thought and discussion and after 30 June of this year the cause factors are not weighed as primary or secondary factors: there are only contributing factors.

OpNav Inst 3750.6C stresses bringing out in detail all of the factors and for personnel factors, description alone is not acceptable. Of special importance is determination of the sequence of events that precipitated the mishap.

In Part IX of the accident report, the board is expected to make appropriate comments and/or conclusions as to the significance of the contributing factors involved and present recommendations regarding possible means of preventing future accidents of the same kind within the unit.

APPROACH welcomes letters from its readers. All letters should be signed though names will be withheld on request. Address: APPROACH Editor, U. S. Naval Aviation Safety Center, NAS Norfolk, Va. Views expressed are those of the writers and do not imply endorsement by the U.S. Naval Aviation Safety Center.

Wheels at Night

Sir:

I am a Firefighter "Crash & Rescue variety, civilian." At this activity, we are required to stand wheel watches. In the hours of daylight, this poses no problem, but at night we have a different situation entirely. Unless the moon is full or nearly so, it is practically impossible to see the wheels of an aircraft on final until too late to warn the pilot should he forget to lower the gear.

I would like to suggest, although I realize it may not prove practical, the addition of some type of light on the landing gear strut or wheel assembly, or some type of reflector placed in such a position as to receive a light source from the landing lights.

With such a light, or reflector on each wheel or strut, it would then be possible for the wheels watch to determine whether the gear was down or not without actually seeing the gear.

We firefighters are willing to go to great lengths to rescue crashed aircrew personnel, and extinguish crash fires when the situation requires, but would much rather remain in standby status, than to rush out to the duty runway in the middle of the night to a bellied in aircraft, to say nothing of the costs involved.

ROLAND H. LATOUCHE
Civilian Firefighter (Airfield)
NAS, Brunswick, Maine

● When compatible with their model aircraft, some squadrons do use reflective tape or white paint to advantage on their landing gear. Your spirit is commendable. It appears NAS Brunswick gets max utilization of crash (prevention) & Firefighter personnel.

Continued from preceding page

After the Fact

Sir:

It often seems that the person who learns most about safety is the safety officer himself. On the other hand, even the sharpest officer loses enthusiasm after two years in the same billet.

For best efficiency from each individual safety officer, for maximum overall benefit to the Navy, and in order to maintain impetus in the safety program it is suggested that the job of squadron safety officer be rotated every three or four months. In such case, the graduate of the USC Aviation Safety School would not automatically be the safety officer, but he should definitely be a member of each accident board.

STALEMATE

● Safety officers, like some of our sweptwing fighters, won't ever get off the deck IF YOU OVER-ROTATE them. And the real mission of safety officers and USC grads is to prevent accidents—not investigate them!

Public Relations

Sir:

Regarding "Look Out For Me" (Sep. APPROACH) . . . NAS Moffett has sent a letter and chart of its traffic pattern to all local private and municipal airports, pilots and airlines . . . in the hope that better knowledge of our traffic will increase alertness and decrease danger of mid-air collisions. We have also addressed meetings of local flying groups and have had most favorable reactions . . .

W. E. BEHRINGER
Cdr., USN
RATCC Officer, NAS Moffett

Pre AARs

Sir:

The article "In the Beginning" in the August APPROACH goes back a long way. I may be able to add a bit more of interest. The N9 planes numbered 2558 and 221 I am sure had Hispano engines and they were something to behold. The *Curtiss* OX5 was on the way out and the OXX5 and OXX6 were the engines of the day in most N9s.

The paragraph listing a few of the old timers missed one that should be in the line up, the *Curtiss R6*. One afternoon in early 1918 an R6 was winging its way east into a headwind and parallel to the beach at Pensacola. It cleared the tops of the wooden hangars but the pilot had forgotten that the new fire proof hangars were a bit higher and so he stuck the two pontoons of the R6 thru the corrugated siding material up to the struts and there he hung at the top of the gable over the big doors. The pilot crawled out and onto the hangar roof but it required blocks and tackle to get the plane back down to earth.

This is one for the books that was prior to the keeping of books; the pilot may still be lucky enough to be around, if so he can now complete the AAR 5x6 card.

P. F. LEWIS
CDR, USNR-R
Milwaukee

Taxi Aid

Sir:

During a recent night familiarization flight I was reminded of a piece of information that may avert night taxi accidents. The essence of this advice, given to me by a taxi-signalman, was that it is much easier for a signalman to judge the position of a plane's wingtips when the running lights are on "steady" instead of the "flashing on and off" position.

This seems logical enough, in view of the fact that he can see the light just twice as much.

Why not establish a lights on "steady" while taxiing up to the line at night?

W. M. ROSENGRANT
CDR, USN

Is This a Record?

Sir:

From April 1957 to February 1958 a total of 15,680 student carrier landings were made aboard ANTIETAM . . . qualified 1,207 students with no injuries, no accidents on deck (one student spun in astern and was recovered) . . . does this constitute a record?

R. W. COOPER
CO, USS ANTIETAM

● CNABATRA attempted to compare your record with that of the USS SAIPAN, found too many variables to enable a valid comparison. From June 1955 through March 1957, SAIPAN had 31,512 landings with a total of 38 accidents, but USS SAIPAN was operating mostly SNJs on an axial deck while the T-28 was predominant on ANTIETAM's angled deck. Best answer is CNAT's . . . "the fact is evident that both carriers have done an outstanding job in safely training fleet aviators in the exacting phase of carrier landings."

Heroism

Sir:

Having read your "Old Pro" account in the September issue of APPROACH, I was impressed with the display of courage and "cool headedness" by the pilot, LCDR H. R. Poorman of BAR, St. Louis.

There have been many other instances wherein pilots have shown the meaning of courage and clear thinking in the face of emergency. Many of these peace-time incidents compare in importance to the feats of heroism performed during combat . . . During wartime, pilots are decorated for such feats. It is my opinion that acts of courage and flying skill during peace-time should be similarly recognized and rewarded. In my book, LCDR Poorman's actions were typical of those deserving such an award.

R. M. ELLIS, LCDR, USN
Chief Test Pilot, NATC

Push Button Tuning

Sir:

For several years certain makes of domestic automobiles have offered a radio that, upon depressing a button or foot knob, would seek the strongest station and tune it in "loud and clear." Other car radios made it possible, by pushing just *one* button repeatedly, to obtain a cyclic selection of pre-selected stations. And even the non-fancy auto radios have, for many years, carried a fancy innovation called push-button tuning that could be operated without taking the eyes off the doll in the convertible ahead.

All those fancy gimmicks are available in autos selling for as little as $3000, at an additional cost of maybe $150 or so.

And what do we have in our supersonic, jillion-dollar fighting machines? We have hand cranked radios located 'way back *there*, where, according to your Safety Center, you get vertigo and spin in whenever you try to fiddle with changing frequencies at low altitude on instruments, or at night.

Doggone shame, isn't it? I bet the outfit that makes Buick's radios would make us a control *gizmo* that would let us preset 10 channels in one minute on the ground, get any channel we want by jabbing a button that we needn't look at, and SEE a number on the instrument panel telling us what channel we had tuned in. Who's gonna take the initiative to see if they can do it? Or is BuAer "aware of this need and working on it"?

"SHIFTING FREQUENCY,
GOODBYE MOTHER"

● **See next letter.**

Channel Changing

Sir:

I feel that the . . . problem could be greatly eliminated if a remote channel indicating device were developed which could be installed on the panel.

A stepping relay could operate in conjunction with the channel selector . . . or use a selsyn motor-generator in which the indicator would automatically follow the channel selector. Electronics manufacturers have available these miniature components which are already in use in military aircraft. The price for developing a system such as this would be almost negligible when compared to the loss of aircraft which has already occurred and has been attributed to channel changing.

LESTER D. WIDICK, JR.
1st Lt, VMA-225

● CNO and BuAer are certainly aware of the vertigo hazard created by the present location of radio controls, and are taking steps to alleviate the problem.

BuAer reports the purchase of some 400 Hayes remote tuners for F4D aircraft, and Admiral Radio Corp. has submitted a simplified new control box and an instrument panel freq/channel indicator for evaluation at NATC Patuxent. A committee of CNO Safety Council members has been appointed to study operational instrument approach and departure procedures with the hope of eliminating low altitude channel changes. Some stations have already made local arrangements to eliminate or reduce such changes.

Tacan Channel Nos.

Sir:

We have had almost disastrous experiences with the same TACAN channel operating on two different ships less than 100 miles apart. This seems unnecessary considering the large number of channels available. One suggestion is that the TACAN channel number correspond to the ship number. For example, CVA 59 have channel 59.

LTJG D. G. HAGER
VS-36

Lost & Found

Sir:

Here's the "tool board" in our Aircraft Inspection Office. Tools found by inspectors are tagged and hung on the board for the owner to claim. It didn't take long to fill up the board, but it appears to have had some deterrent effect as there has been a conspicuous absence of misplaced tools since the board was installed. . . .

LCDR HOYT DUFF
ASO, NAS GROSSE ILE

back in the harness

"Time spent in the air alone does not bring on all the wear and tear of stresses to which the military pilot is subjected."

—Flying Safety Officers Course
University of Southern California

Muscular work by aviators is often extensive, although a great amount of it may be relatively unconscious. The ever present threat of injury and death produces a mental apprehension, subconscious or not, which is reflected in a state of constant increased muscular tenseness. This tenseness is increased consciously during maneuvers and unconsciously during travel through rough air which requires the continuous bracing of the body to counteract the buffeting of the airplane. When the pilot is cold, shivering is superimposed on all the other muscular work. — *Armstrong, The Principles and Practice of Aviation Medicine.*

The following is part of the 1st endorsement on the AAR on the accident described at the beginning of this article:

"It has been the policy of this command that individual pilots have the prerogative of flying or not flying when it is relative to their physical and mental condition and with no questions asked. Senior officers and flight leaders are also on the alert for the obvious cases. Much effort had been made to impress upon the squadron pilots the necessity for proper physical conditioning and to properly and strongly indoctrinate pilots in all measures of safety. The high rate of accidents during the holiday seasons with particular reference to the loft maneuver had been emphasized personally by this command just prior to leave periods and all hands were on the alert to prevent such accidents. It would seem that the responsibility of one's own life would be adequate safeguard against this important and vital factor of fatigue. However, as long as we have eager and conscientious young pilots, this will continue to be a problem.

"This command will continue its present policy of individual responsibility for flying, and flight leaders and senior officers have been directed to maintain a closer surveillance of junior pilots and unreservedly ground anyone even suspected of being either emotionally or physically unfit for flying. It is felt that this will be an easy task in this particular command due to the extremely costly lesson learned by the death of LTJG _____. In other commands, constant curbing of the eagerness of young pilots to fly at all times under all conditions must be a continuing concern of all responsible officers. The mere asking of an individual of his physical condition and allowing him to make the decision is not enough."—*Squadron Commanding Officer*

CHRISTMAS leave with the wife and folks had been real great this year—all 13 days of it.

Up home, the weather had been crisp and cold, just right for the holidays. Back at the air station, you had to look at the calendar to tell it was December 28. The thermometer by the swimming pool was registering a pleasant 68°.

The LTJG had stretched his leave out to the last minute to stay at home as long as he could. December 27th he slept until noon, spent the afternoon quietly and ate dinner with the family. A few hours later, he left for the municipal airport to catch a southbound commercial flight departing at midnight.

As the big airliner droned through the black winter night, the young officer managed a couple of hours of fitful sleep. The plane put down at its destination at 0330.

Taking a taxi to the naval air station, he logged in with his squadron duty officer at 0400, then sacked out in the readyroom for a few more hours' sleep. At 0715, he got up, ate breakfast and mustered with the squadron.

When he reported to the squadron flight officer, he was reminded that he was not required to fly on the day he was returning from leave. It was established policy that individual pilots could fly or not fly, relative to their physical and mental condition, no questions asked. However, if the pilot felt ready, the flight officer said, he could make a FAM flight (required of all squadron pilots returning from extended leave) and if he chose to do so, practice loft bombing maneuvers in the afternoon.

The pilot elected to fly.

For the morning FAM flight, he took an AD-6

Continued from preceding page

up for an hour-and-a-half to practice loft bombing maneuvers. As the squadron's special weapons officer, one of the last things he had done before going on leave was to lecture squadron pilots on the correct technique for making a loft maneuver.

While he had been on leave, a new instrument had been installed in the aircraft, the first piece of this gear available to the squadron. In conjunction with his billet as special weapons officer, the LTJG used part of the morning hop to familiarize himself with the new equipment. In the readyroom after the flight, he commented that when using the new instrument he had experienced some difficulty recovering from the loft maneuver.

On the morning hop, he completed a known minimum of eight loft maneuvers at altitude, each designed to pull 4½ G.

Flying the same plane in a flight of six ADs on the afternoon hop, the pilot launched early to make additional practice runs at altitude before going on target. He is thought to have performed four more loft maneuvers.

The first group of three ADs completed their runs. After rendezvous, each pilot in the second group of three made a low pass over the target run-in course for familiarization with the target area. The flight leader then pulled up and began and completed his run. The No. 2 man came in over the course and aborted.

Flying in the No. 3 spot, the LTJG called in at the 180° position and began his run. He did not call at pull-up and consequently was not observed in the initial part of the maneuver. He was first seen spinning to the left at 1800 feet, coming straight down. The plane crashed approximately 200 yards from the pull-up point, exploded on impact and burned.

According to the Aircraft Accident Board's report, a contributory cause of this accident was the pilot's fatigue (five hours' broken sleep in the last 27 hours) which had lowered his G-tolerance. The newly installed equipment which he may have elected to use on the bombing hop was thought to be involved in some manner but the lack of evidence due to the fire and the lack of witnesses to the first part of the fatal run made a final determination impossible.

Pilot and crew fatigue, which has figured in a large number of recent accidents, is a most important problem in naval aviation.

Fatigue has many causes and takes many forms . . . the fatigue of a weekend warrior who drives long hours in heavy traffic to reach his duty station and is tired by the time his flight takes off . . . the young carrier pilot who lives it up on leave to the extent that he comes aboard ship with a backlog of fatigue at the beginning of weeks of intensive flying . . . the fatigue of a transport crew on the last leg of a Pacific flight from Midway to Tokyo.

Because of the large number of intangible and variable factors involved in pilot and crew fatigue, there can be no yardstick for its measurement. Fatigue is a matter primarily for the individual airman and his flight surgeon. In order to remind flying personnel of the dangers of fatigue and in the hope of stimulating thought and discussion which will lead the individual to his flight surgeon with specific questions, APPROACH presents this general discussion on the subject.

What is fatigue?

Armstrong in *The Principles and Practice of Aviation Medicine* says: "The word fatigue is an inexact expression used to describe either a feeling of weariness or a diminished capacity for doing work, or both, generally as a result of previous activity. However," he continues, "even in the absence of previous work, fatigue may be complained of, proving that it may arise from purely psychic or emotional stresses."

Psychic and emotional stresses are generally considered significant causes of pilot and crew fatigue *since fatigue in aviation personnel is out of proportion to the physical exertion involved.*

Fatigue can be either temporary or chronic. Temporary fatigue or normal tiredness is completely relieved by a good night's sleep. Chronic fatigue is not relieved by a normal night's rest. It may be characterized by one or more of the following: increased tension, reduced aggressiveness, irritability, loss of appetite, lowered individual morale and insomnia. Combat fatigue is an extreme state of chronic fatigue which occurs in operational flying. Additional symptoms include abnormal fears and tremors.

Generally speaking, the three main causes are physical stress (from outside the individual) such as heat, noise and vibration; physiological stress (from within the individual) such as hypoxia, lack of sleep, poor physical condition; and emotional stress (from without and within) such as boredom, anxiety and fear.

What are the effects of fatigue in flying personnel?

The effects of fatigue include such physiological phenomena as lowered physical efficiency, reduced night vision, increased susceptibility to vertigo and decreased G-tolerance. Subjective symptoms are increased irritability and increased awareness of

physical discomfort. The degree of fatigue experienced is determined by the individual's tolerance to stresses, the amount and duration of exposure to stress and the influence of group morale. The fatigue impact of a stress situation is lessened for the individual when he knows others in the same situation are experiencing similar feelings. Good personal and group motivation can increase resistance to fatigue. Fatigue is more significant in flying personnel than in the general public because in flight there is less margin for human error.

Fatigue results in the *unconscious* lowering of performance standards, a state of affairs sometimes referred to as skill fatigue. According to the USAF Flight Surgeon's Manual, characteristics of skill fatigue in pilots and crewmen are:

- √ Requirement of greater than normal stimuli to produce the appropriate responses.
- √ Errors in timing of movements involved in a larger operational sequence.
- √ Overlooking of some important elements in the task sequence.
- √ Loss in accuracy and smoothness of control column and rudder movements.
- √ Unawareness of accumulation of rather large errors in azimuth, elevation and attitude.
- √ Increase in control movements involving greater fluctuation in order to produce some effect.
- √ Under-control and over-control of movements.
- √ Occasional forgetting of side-tasks.
- √ Increasing unreliability of reports of what transpired.
- √ Errors of inattention.
- √ Increasing "stickiness" or fixation of attention in which the pilot becomes preoccupied with some one part of a task to the exclusion of others.
- √ Allowing various elements of the operational sequence to appear out of place with respect to one another.

Among the best known and best documented studies of pilot fatigue are the Cambridge Cockpit Studies conducted some years ago by a research committee of the Air Ministry of Great Britain.

In a mock-up of a standard *Spitfire* cockpit which automatically recorded deviations, 140 pilots of varying experience in flying were tested in simulated instrument flight. The results showed a definite *qualitative* change in performance, although the pilot was himself unaware of any change.

Almost without exception, the study report stated, subjects *thought* they had improved steadily throughout. However, as fatigue increased, performance ability decreased and the subject unconsciously set himself a progressively easier task.

As they became tired, the pilots tended to split complex tasks into component parts. At first, they regarded the instruments as being closely interconnected; a movement in one instrument was associated with corresponding movements in other instruments. When they became fatigued, the pilots tended to forget they were flying planes and regarded the task in more simple terms. The movements of the needles ceased to be symptomatic of aircraft behavior and became merely stimuli demanding responses from the pilot to get the needles back where they belonged.

As fatigue continued to mount, the pilots became more irritable and handled the controls violently with increasingly poor control of the machine. They became more conscious of their physical discomfort and complained of heavy helmets, hot cockpits, etc.

A particularly significant occurrence in the experiment was that wheels up landings were greatly increased by fatigue.

To check the validity of the results of the Cambridge Cockpit Studies, the test procedures were repeated on more skilled operational pilots by independent experimenters using a *Wellington* fuselage with full cockpit equipment. There was no substantial change in the results except that the more experienced pilots flew longer before critical levels of fatigue developed.

There are some situations in which a person has to fly when fatigued. In this respect, it is well to remember that fatigue does not lower an individual's knowledge of how to perform a task; but it decreases his will to do the task and thus results in carelessness and increased accident hazard. The Cambridge Studies showed that *special instructions to be on guard against skill fatigue led to significant improvement* with respect to selective deterioration, preoccupation, stickiness of attention on task details and precipitous over-control and under-control of control movements.

What can be done to increase resistance to fatigue?

The individual airman can do a number of things to help himself:

1. *Get plenty of sleep:* Though in itself, the loss of sleep may not be decisive, combined with other stresses of factors (as in the case cited at the be-

Continued from preceding page

ginning of this article), it can be of great significance.

2. *Maintain good physical condition:* Vital factors are proper diet, exercise and recreation, and in smoking and drinking habits, moderation.

3. *Wear and use personal safety equipment properly:* The G-suit reduces fatigue by assisting circulation. To further counteract fatigue on flights above 10,000 feet, strict oxygen discipline should be observed.

4. *Vary the old routine:* Small things such as getting up and turning around can help shake off fixedness and rigidity which can tire the airman. If the pilot can't get up from his seat, he can reduce fatigue by stretching, by opposing his muscles or by walking his toes inside his shoes. Minor diversions such as eating an apple or a candy bar, drinking fruit juice or even, as one authority suggests, singing can break the monotony and counteract boredom.

5. *Watch out for dehydration and hunger:* Dehydration can be alleviated by adequate liquids and salt intake. Snacks will fix those hunger pangs.

6. *Realistically and objectively evaluate your condition and ability to fly:* A man mature and responsible enough to be a part of naval aviation will exercise good judgment in deciding if he is fit to fly. Be frank with yourself and when in doubt consult your flight surgeon. He is in an ideal position through experience, knowledge and examination and observation of individual cases to help you.

Many other persons in the field of aviation and in related fields can help reduce flying fatigue.

Research men and designers can make a great contribution through work on clothing and personal equipment, seats, controls (their direction of and resistance to movement and their location), instruments, cockpit lighting, control of cockpit pressurization, humidity, temperature and ventilation, and reduction of noise and vibration. Work is needed on the layout of controls and instruments at individual stations and in the integration of individual stations in the overall arrangement of aircraft flight decks.

Maintenance workers can lessen the airman's apprehension by high standards of maintenance and repair of equipment which increase his confidence in the aircraft's mechanical reliability.

Administrative personnel can draw up well-planned flight schedules allowing pilots and crews plenty of time for meals, sleep and breaks between scheduled activities. This is especially crucial in student pilot training. Maintenance personnel should be given ample time to do a thorough and competent job. In establishing realistic flight and maintenance schedules, extremes of temperature and humidity should be taken into consideration.

The pilot's or crewman's family can help provide a happy home life, free as possible from emotional conflicts, tension, worries and disturbances. An airman's morale is a key factor in his resistance to fatigue.

Through his understanding of the problems involved and his knowledge, examination and observation of the individuals under his care, the *flight surgeon* can make an important contribution to lessening the accident potential of fatigue.

And, finally, *flight leaders and senior officers* all share the responsibility with the flight surgeon and the pilots and crewmembers, themselves, to maintain a close watch and temporarily ground anyone suspected of being "too tired to fly."

SACKTIME

The following is excerpted from OpNav Instruction 3740.7 of 25 June 1957.

SLEEP AND REST

(1) Adequate and regular sleep is required to maintain the body's store of vital energy. Neuromuscular fatigue is alleviated and mental alertness is restored by sleep in favorable surroundings. Noises, excitement and worry adversely affect the restfulness and diminish the benefits of sleep. While the optimum duration of sleep varies widely throughout life, the normal requirement for flying personnel is approximately eight hours in every 24-hour period. Factors, such as excessive fatigue, ill health, and emotional stresses, will increase this requirement. Flight schedules should be made with due consideration for watch-standing and collateral duties. The latter should not be so time-consuming as to interfere with adequate rest and preparation for primary flying duties.

(2) In unusual flight situations the flight surgeon should be consulted with regard to provisions for sleep and rest. . . .

ATTITUDE TOWARD GROUNDING: The practice of grounding aircraft for maintenance deficiencies is well recognized. A similar attitude should prevail toward the grounding of flying personnel. Pilots should be encouraged to consult their flight surgeons when the slightest doubt of their fitness occurs. Commanding officers should give support to an unbiased and healthy attitude toward grounding of flying personnel in the interest of safety.

notes from your flight surgeon

Tighter Caps

TO BE sure that your Mk-2 life vest will be fully inflated if you ever need it, make sure that the CO_2 inflater cap is tight.

After a recent accident in which an AD-6 pilot's mae west did not inflate fully, the squadron flight surgeon checked all the pilots' life vests. Only four out of 21 had tight inflater caps.

Some squadron pilots carry a couple of extra CO_2 cylinders in their life vest pockets as insurance in case the cylinders in the inflaters do not function. They also come in handy to reinflate the vest if the pilot has to remain in the water for any length of time.

Consumer's Report

HERE'S an endorsement of the helicopter rescue seat from a man who ought to know:

"I had read about these seats but had never seen or used one. I think they have the sling far outclassed. (I can't say anything for the clam net since I've never used it.) All I did was pull the seat to me and spread my legs and I was aboard. As soon as I felt it under me, I gave a 'thumbs up' and they hoisted me (to the helicopter). They took me all the way in and, by holding my feet up very slightly, they were able to close and lock the hatch which made getting off the seat easy and is another advantage over the sling."

The F9F-8 pilot had gotten out of his parachute harness as soon as he hit the water.

"The chopper pilot and crewman did a wonderful job," he states. "After a little drop of brandy and a hot shower I was none the worse for wear except for being stiff for the next couple of days. It felt good!"

Dental Delay

THE reporting flight surgeon in a recent JD-1 accident points out the potential danger of flying too soon after dental work. Although it was not a contributing factor in this case, the pilot in question took off immediately after dental treatment involving the use of a local anesthetic. His mouth and lip were still numb.

Often, the flight surgeon states, it is difficult to predict the degree of discomfort which will be experienced after an anesthetic wears off. Meanwhile, the numbness, which is an unusual and distracting sensation in itself, can seriously affect speech and radio transmission.

That Old Enemy Again

IN a recent TV-2 accident which caused strike damage to the aircraft, fatigue was an underlying factor.

Both the instructor and the student involved got up at about 0545 after a normal night's sleep. They took off around 1000 on a flight in which they spent 8.4 hours in the air.

At a fuel stop at approximately 2100, they grabbed a couple of sandwiches apiece and some milk. This was the first time the student had eaten since 0630 and, as far as he knows, the first time the pilot had eaten since breakfast except for a coke and a package of cookies.

Weather conditions were minimum at their destination with ceiling 100 feet and visibility ½ mile.

The instructor took the controls from the student at the low station and started his GCA approach. At around 0053, shortly before the plane broke out of the overcast, its rate of descent started to increase. The plane collided with the

Continued from preceding page

ground in a level, flat attitude, tore through the field boundary fence, became airborne again, jumped a ditch, collided with the ground again and came to rest inside the field boundary 180 yards from the point of initial impact.

The student came to shortly afterward, blew the canopy and climbed out of the aircraft. He set off a night flare from his mae west and in a matter of minutes, a rescue party arrived.

The instructor was unconscious. Later medical examination showed that he had suffered a cerebral concussion.

The instructor's lap belt and shoulder harness were loose and he had lost his helmet.

In the opinion of the reporting flight surgeon, because of fatigue the instructor, an experienced pilot, forgot to tighten his lap belt prior to letdown. Had his lap belt been secure, in all probability he would not have been thrown forward on impact and would have retained his helmet. This, in turn, would have reduced the possibility of head injury.

Bridle Trouble

THERE have been two fatal accidents aboard one carrier in recent months involving flight deck personnel retrieving catapult bridles during launching operations.

In the first accident, two port bridle retrievers were killed as they came over the deck edge and were struck by a detached wing tank after an FJ4-B left the flight deck. In the second accident, both catapults were being used alternately. Following a launch from the starboard cat, the port bridle retrieving crew mistook the shot for their side and came out to the catwalk after the customary count to ten. One of the men took a short cut and jumped on the flight deck just as the FJ4-B was launched from the port cat.

The reporting flight surgeon reiterates the need for a mechanical method of retrieving the bridle to eliminate the requirement for personnel in the catwalks forward of the catapults.

Hard Hats for Multi-Fan Craft

THIS helmet is split open as the result of crash damage—yet the multi-engine pilot who was wearing it is very much alive. He wouldn't be *IF* the same crash forces had been applied to his unhelmeted head!

The Weekly Summary for 17-23 February 1958 reported a P2V crash that resulted in four deaths from light blows to the head. This pictured hard hat enabled its wearer to survive a crushing impact.

Cognizant bureaus and laboratories are designing a protective helmet specifically for multi-engine flight crews. Until available, the H-4 can be worn. Are they being worn by the crews and passengers in your squadron?—*Ref ComNavAirLant Instr 10126.1A; and ComNavAirPac Disp. 162312 June '58.*

Familiarize

FAMILIARIZING passengers with aircraft safety equipment and emergency procedures is every pilot's professional and moral obligation.

When the pilot of a two-plane AD-5N flight ditched his aircraft, his passenger, although clear of the cockpit, hesitated in leaving the wing of the plane and either fell or was pulled down with it. Possibly his delay and death resulted from unfamiliarity with the parachute, pararaft and lanyard, and lifevest. He had no knife.

In this case, the procedure to make a clean exit is to release the lapbelt. This frees the occupant from the cockpit, allowing him to retain his chute pack and pararaft.

As it was, both the pilot and passenger unbuckled their parachute harnesses and left the cockpit. The pilot unsnapped his pararaft lanyard and pulled his parachute and pararaft out with him. The passenger's pararaft lanyard attached to his life vest from the CO_2 bottle in his pararaft probably played out until he was on the wing then held him fast to the sinking plane. Here, had he been carrying a knife he could have cut the lanyard and freed himself.

Investigation showed that the pilot had failed to familiarize his passenger with the aircraft's safety equipment and procedures prior to takeoff although he had asked him if he was checked out in the aircraft and had received an affirmative answer. Further the passenger had apparently received no survival equipment instruction since a flight five months before although this was his third flight since then.

The flight leader stated that he, himself, had not briefed his two passengers on survival gear. One

was an experienced naval aviator and the other a ground officer who had flown with the flight leader several times and, the pilot was convinced, was adequately checked out in his survival gear.

Sudden Inflation

CONTROL valves on CO_2 bottles in life rafts should be safety wired.

While on a routine flight, a TF 1Q received a sharp jolt. Immediate inspection revealed that the life raft compartment hatch and life raft were missing from the port engine nacelle. Although the hatch and raft had struck and damaged the vertical fin and horizontal stabilizer, the pilot made a normal landing.

What probably happened was that vibrations of the aircraft caused the unwired valve to inadvertently inflate the life raft. As the raft inflated, it exerted great pressure against the hinges of the hatch and caused them to give way.

Other aircraft in the same squadron were checked and the control valves were safety wired.

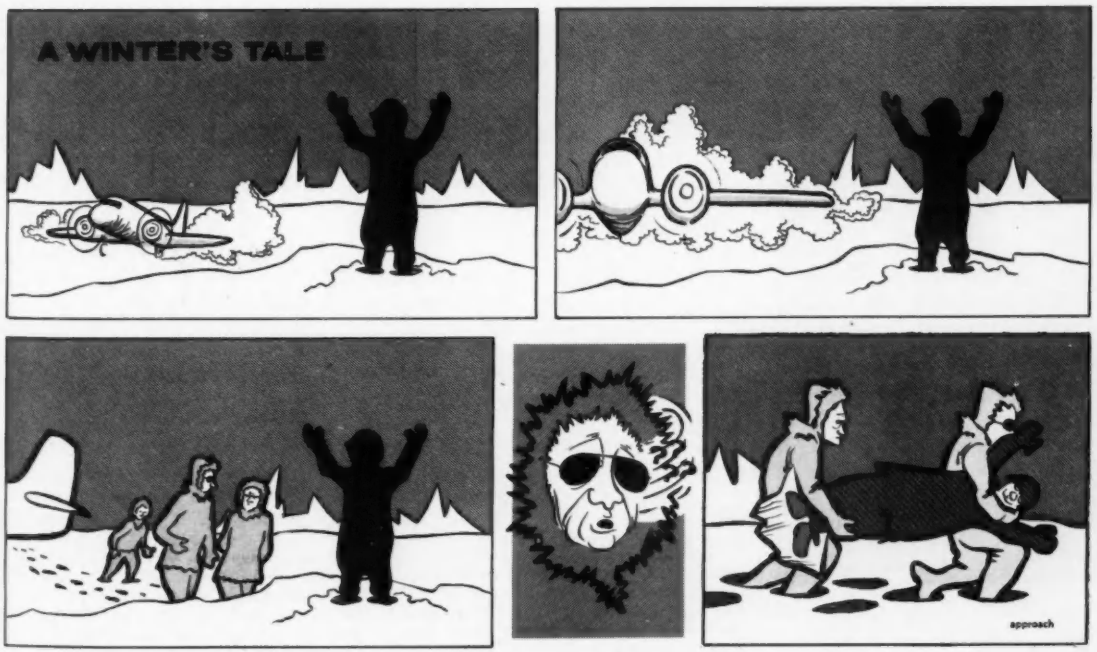
'In Case' Thinking

THE sonarman in a recent HSS-1 accident escaped from the ditched aircraft quickly because he had done some "in case" thinking ahead of time.

Only the day before, all crewmen and pilots in his squadron had met to hear the comments of the survivors of a helicopter accident which had taken place that week. The experiences of the crewman in the first accident started the sonarman thinking about what he himself, would do in a similar situation.

The sonarman had also discussed escape methods with other helicopter crewmen. A shipmate whose opinions he respected and valued had told him he could escape through the port emergency escape window at the elbow of the sonarman's station.

When the accident was imminent, he began getting ready. He opened the latch with his right hand and knocked it out with his left. After the plane settled in the water, he unbuckled his safety belt and shoulder harness with his right hand and, pulling himself through the window with both hands, swam away from the plane. He had no difficulty getting out.



"I OBJECT!"

CDR Paul F. Stevens, USN

Cdr. Paul F. Stevens, recent chief projects officer, Flight Test Div., NATC, flew P-boats during WWII, earned the Navy Cross and two each Silver Stars, DFCs and Air Medals. Post-war duty included VR, TPT, Naval War College and first skipper of VAH-1, the first Heavy Attack squadron to be equipped with the A3D. Cdr. Stevens' log book contains over 9000 hours, includes carqual in the F8F, FJ-3M, F11F, TF, AJ, A3D, F8U and A4D. (Since this article was written Cdr. Stevens has boarded USS Saratoga for duty.)

Acknowledging that there are nearly as many ways to land a high performance aircraft as there are high performance aircraft, APPROACH offers here the views and recommendations of a widely experienced aviator. As is customary in controversial matters dealing with one or more ways to skin a cat, APPROACH neither condemns nor defends the author's views. Cdr. Stevens' techniques are not radically new, not guaranteed to end the problems of naval aviation, nor are they likely to get you in trouble if you know what you're doing when you follow them. Readers who agree or disagree are invited to write their views and methods to the Editor.

I OBJECT to some of the things contained in articles by contractor's test pilots on "How I Land the ---, ---, ---." I object because while I acknowledge that the methods published are quite probably the best for the individual test pilots and conditions concerned, they are not the best for teaching a group of naval aviators of varied experience levels how to land under all operating and tactical conditions.

Pretty generally, the contractors' pilots—for whom I have considerable respect—get to fly under favorably controlled conditions . . . tremendously long runways, little or no night and instrument flying, and no requirement for getting aboard the boat.

More specifically, my objections to the past "How I Land.." articles are:

1. They recommend an approach requiring a varying airspeed; that is, a decreasing airspeed from the break to the "180" to the "90", a straightaway airspeed and an over-the-fence airspeed and even a touchdown airspeed.

2. Consequently, a varying amount of thrust is required for each portion of the approach.

3. Likewise, with a changing attitude of the airplane, re-trimming throughout the entire approach is required.

I use the same approach technique for every airplane and I consider it to be not only foolproof, but also applicable for all landing situations and applies to any jet airplane.

Mirror Type Approach

Essentially, this method is an adaptation of the mirror landing system type approach. Landing with a flight of airplanes may require some modification of the break; however, singly I enter the break at 1500 feet and 250 knots.

1. Checklist has been completed well prior to approaching the break except for gear and flaps. The airspeed is an optimum airspeed but also considered a maximum. At about one-third up the duty runway, airplane is rolled into a 30-degree bank, power retarded to about 70% rpm and speed brakes are opened.

2. This is also considered to be a maximum bank angle.

3. As placard speed for lowering flaps is reached, flaps are put to the full down position and speed brakes closed. Once flaps are down and indicating down, landing gear is then lowered and RPM adjusted as necessary to continue deceleration at a moderate rate.

Airplane is flown downwind to arrive at the 180-degree position with landing checklist completed, 1000 feet altitude, and at best approach airspeed for landing. If blessed with an angle-of-attack indicator, an angle of attack for landing is flown. By best approach airspeed for landing I mean the airspeed that I would use for a normal shipboard mirror landing. This will vary from airplane to airplane, of course, and also for landing weight. At Patuxent, for every airplane flown, we use kneepad cards which contain a checklist and emergency procedures. To this I have added best approach speeds for given amounts of fuel remaining. Being set up at the 180-degree position is a must for me and I accept nothing, other than the stipulation set forth above.

4. If you are not set up at the 180-degree position, *take it around.*

Beginning of Turn

I begin my turn off the 180 beyond the end of the runway a sufficient distance to insure a one mile straightaway upon entering the final. My distance abeam of the runway is sufficient to require no more than a 20-degree bank turn into the final. In the turn, the altitude is flown off from 1000 feet to arrive in the straightaway one mile from the

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"During the final, speed is maintained on best approach speed, airplane attitude is held constant and power is adjusted as little as possible. . . ."

CDR Stevens emphasizes that his technique is equally applicable to ship or shore.

end of the runway at 500 feet altitude.

During this descending turn, the speed remains on the best approach airspeed or angle of attack, if installed. I have found that with most airplanes the power required for this descending turn is slightly greater than that required for the straight away into a landing. Care should be used during this turn as margin above stall has been slightly reduced.

My Straightaway Point

Another point in which I try for perfection is arriving at the straightaway position which, as I have stated before, is one mile from the end of the runway at 500 feet altitude. Pilots should visualize a point for this position and fly to it, arriving on airspeed and altitude. The common mistake is to look at the end of the runway during the descending turn from the 180 and to angle into the final. From the straightaway position to the landing, the approach is identical to that of a standard mirror FCLP type. As airplane is rolled level, I reduce power (and open speed brakes on some airplanes) and establish a rate of descent to maintain an approximate 3-degree glide slope. With practice this can be easily visualized.

Glide Slope

For any pilot learning this landing method, I recommend either several unhooded GCA approaches or a mirror period in order to be able to recognize this glide slope. During the final, speed is maintained on best approach speed, airplane attitude is held constant and power adjusted as little as possible to maintain a set condition. It should be noted that my corrections during this final to maintain glide slope and an airspeed are what I choose to call "classical corrections." That is, if I am high and on airspeed, I ease the nose over slightly and reduce power slightly.

Upon Reaching Glide

Upon reaching the glide path, I add power slightly and ease nose back up to the original attitude. If I am high and slow, I simply ease the nose over. In other words, the airplane is flown with a play of attitude, thrust and glide path as required. I generally aim right for the touchdown point and simply fly the airplane right on with no change in attitude whatever. If a mirror or a POMOLA is on the duty runway, I use this as a landing aid to maintain my glide path. This

touch-on will appear to be hard to the pilot not qualified in mirror FCLPs. However, it is well within the sink limit of the airplane and no harm will be done. Immediately after touching on, I retard the throttle to idle and simply continue to "fly the airplane on the deck" as airplane decelerates.

Rollout

I wish to emphasize the immediate retarding of the throttle to idle upon touchdown. On some landings made using this approach, the airplane may bounce off a bit. However, by immediately retarding to idle and simply holding a landing attitude, the airplane will settle back on and landing may be completed. Don't lower the nose on a bounce and attempt to fly back down—a porpoise may result. At idle thrust there is no place to go but back to the deck, so hold the landing attitude. If touch-on has been made at too high an airspeed, and consequently a nosewheel-first or flat attitude contact is made, this bounce may be of alarming proportion. The same procedure holds true, however; at idle RPM establish a landing attitude and re-land the airplane. The roll-out on most airplanes is no strain, and I normally do not begin braking until below 100 knots. Braking technique is a separate subject and I will not discuss it at this time. I do, as a general rule, however, plan to use the entire runway length and brake as necessary to cross the emergency arresting gear at a speed which ensures a full stop at the end of the runway. Heavy braking and high speed turns at the intersection are not for me.

To Pick and Hit Spot

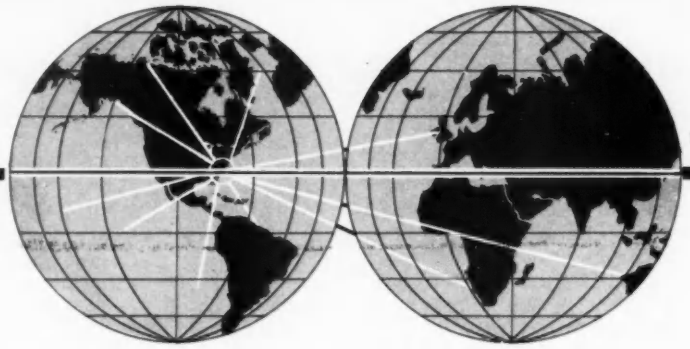
For me, this is the best method of getting on the runway on a chosen spot at a minimum airspeed. Knowing the best speed for each given weight and using power required for a 300 to 500 foot rate of descent in the approach configuration, I have found that I can easily hit the touchdown point on the first landing in a new model airplane. This is an excellent system for landing in low visibility conditions and if this method is employed on every landing right from the start, the time required for preparation before going aboard ship will be significantly reduced. Night landings are no more difficult than day landings using this method.

I personally favor using this same best approach airspeed or angle of attack and landing techniques for my GCA landings that I use for carrier landings and normal landings. On a GCA approach, I turn into final with gear and flaps down and on the best approach airspeed. When instructed to "Begin standard rate of descent", I open speed brakes and/or reduce power depending on the model airplane to establish the same landing approach used on a normal field landing.

With practice, pilots will be able to judge the 3-degree glide path with no trouble whatsoever. I feel the main virtue of this landing method is that it gets you on the end of the runway at a minimum speed every time and this method is useable rain or shine, day or night, NAS or USS boat.

". . . the airplane is flown wih a play of attitude, thrust and glide path as required. I generally aim right for the touchdown marks and simply fly the airplane right on with no change in attitude whatever."

MONITOR



Correct Terminology

Recently, a pilot taxied out for takeoff and called the tower for "Scramble one." This pilot was not on a scramble alert, but the tower took him literally and cleared him for a priority takeoff before all other aircraft. Stick to the *correct terminology* when on the air.—*2nd MAW*

Preflight Inspection

That the Maintenance Department mark all access doors, that would normally be opened for pre-flight inspection, with the phrase "OPEN FOR PRE-FLT." This phrase to be in ½" high letters painted with a high intensity orange paint.—*NAS, N. Y., N. Y.*

Kaneohe Service

The MAG-13 Operations Officer pointed out a new service provided by MCAS Kaneohe Tower. When the term "Kaneohe Land" is transmitted by a pilot, MCAS Kaneohe Tower will automatically transmit the landing runway direction and any unusual field conditions. This service will permit the pilots to plan ahead for conditions to which would otherwise be unaware. All committee members commented favorably on this service.—*Kaneohe Bay Area*

Foreign Objects-Sweeper Bristles

During the runway, taxiway and aircraft parking area clean-up campaign, wire bristles from the sweeper brush were found in aircraft parking areas requiring a follow-up by the magnetic pick-up unit.—*ComFAirPhil/ComNABPhil*

Wheel and Tire Fires

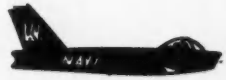
Overheated brakes and possible subsequent wheel fires cause rapid expansion of the P2V magnesium wheel. The use of any wet agent such as CO_2, foam, or water to extinguish a wheel fire or to cool an overheated condition will cause magnesium contraction and introduce severe internal stresses into the wheel. This internal stress can cause a wheel failure immediately or hours later and rupture the tire. This type of failure can cause fatal injuries to personnel in the wheel area by resulting explosions. Aircraft damage can also occur if the over-stressed wheel fails on subsequent landing.

Recommendations:

a. Apply dry chemical extinguishing agent if available.

b. If necessary to apply a wet agent due to a spreading fire, apply as little as necessary and approach wheel from fore and aft positions only.

c. If possible, allow wheel to cool slowly without the use of an extinguishing agent and avoid building up internal stresses.—*Brunswick Area*



EXCERPTS FROM SOME OF THE NAVY'S SAFETY COUNCILS THROUGHOUT THE WORLD, WHO PROVIDE LOCAL LEADERSHIP AND EMPHASIS TO THE NAVAL AVIATION SAFETY PROGRAM.

Preparednesss

The interpretation of fear and panic deserves special attention among the symptoms of vertigo because of its disabling character. Intensive training and increasing confidence and knowledge about vertigo should decrease the severity of symptoms and so reduce the component of fear. The same answers exist today; going on instruments prior to complete loss of visual reference, intensive reliance on instruments, and more specifically an attempt to scan the panel rather than fix on one instrument alone. This study re-emphasizes the fact that early recognition, realization that vertigo is present, and then methodical attention to instrument flight will shorten the period of incapacitation, materially reduce the number of incidents, and thereby increase the aviator's flight proficiency . . .

The answers given on the questionnaires show that the aviator is intensely interested in this problem, and so presents a fertile field for logical and thorough training.—*3rd MAW*

Runway Duty Officer

The Runway Duty Officer has assisted in the prevention of one wheels-up landing in the short time the watch has been stood. The NAS Moffett Field representative and Commander Fleet Air Detachment, Moffett Field concurred that the watch has been effective and that it should be continued.—*FAir Alameda*

Full Turn of the Wheel

After some discussion it was brought out that many of the problems of safety coming up at this time are repeats of items previously promulgated up to two years ago. Accordingly, it was recommended that previous minutes of Safety Meetings be reviewed, compiled in booklet form and reviewed periodically at the All Pilots Meetings.—*CO, VR-24*

Want Hardhats for P2V

In 30 VP aircraft accidents between March 1957 and March 1958, 30 percent of injuries were head injuries. Naturally it is assumed that shock, unconsciousness and panic caused by head injuries will render a crewmember less capable of surviving a crash involving fire or ditching. The wearing of hardhats will prevent many such injuries. Investigation is being made into the possibility of designing a suitable hard hat for P2V use which will also meet the requirements for cockpit communications between the pilots.—*Northern Area* (See page 10).

TRIMMED

"WELL I'm glad it's over . . A bit hairy . . . Never figured it'd happen to me . . . We're lucky."

All of these (and more) were heard after the flight I'm about to tell about. It might prove helpful to some of the "Stoof" (S2F) drivers. To begin with we had received (and read) all the dispatches concerning non-use of the Rudder Assist except during emergencies. All of our check-off lists had been changed to reflect the new policy.

But for *this* flight it was different. It was a test hop and the first flight in 3½ months for this plane. As a "station sleeper" and VS training officer, I was chosen to test hop the "ramp rat." For my copilot I had a weekend warrior on two weeks cruise just learning to fly the plane. He had very few hops in type, so I decided to combine a little instructions with the test hop.

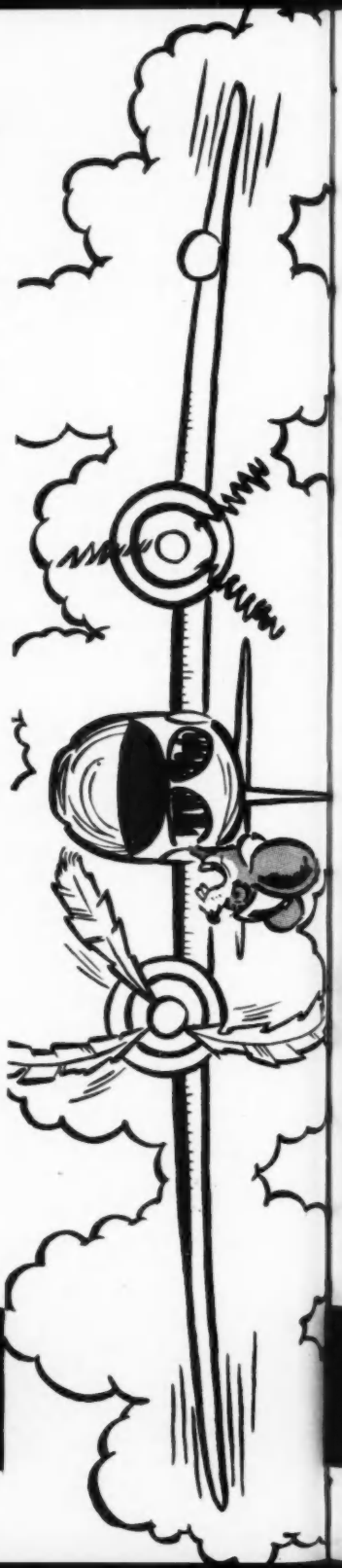
To demonstrate taxi techniques, and reduce taxi speed, I flipped on the rudder trimmer and taxied over a mile without touching the throttles (I know, I KNOW). After turnup and check list the line chief (luckily a passenger) asked if he could put some more hydraulic fluid in—said it was a little low. Now I had checked the level on entering the plane and it was maybe ¼-inch low—plenty good I thought. Anyway, a gallon was added and we took off uneventfully.

At 6000 feet we went through the test hop checklist. I lowered and raised both flaps and gear—sorta sluggish but they worked. Next I demonstrated the rudder trimmer in flight so the copilot would have the feel of it when we feathered each engine as a part of the test list. After feathering the starboard engine we flew around for 3 or 4 minutes then it was restarted, warmed and returned to operation. We both had a smoke and discussed single engine performance. Then (real clever like) asked my copilot to "look at that sub down there" as he did, I slyly shut off the port engine gas.

Now we start. When ole lefty stopped, the copilot put the rudder trimmer switch ON and added right rudder to regain balanced flight. But we continued to turn and roll to the left. I jammed on the right rudder and said (rather hoarsely) "Don't let 'er get away from you!" Still we continued to roll left.

When we reached a vertical bank I decided all was not well so I cut back the good starboard engine and (quick like) started the port. It took 12 to 15 inches more power on the port engine, full right rudder (both of us) and full right trim to maintain some semblance of level flight (ball still out of the center). A glance at the rudder trimmer indicator revealed that, instead of right rudder we had *full left rudder boost!*

We turned it off. No help. We pulled the circuit breaker but still no help. By this time we were down to about 5200 feet and headed back towards home. I figured we could land with the power differential but what would happen when we pulled the power off? With ample altitude I decided to try a few things first. Since we weren't helping things by holding right rudder *against* the trimmer, I



Anonymous reports of flight experiences—By sharing your experience you may save another pilot's life—Send us your Anymouse report.

figured we had nothing to lose by trying to go *with* the trimmer for a change.

Sure enough, this helped and it slowly streamlined itself in the neutral position and we balanced our power, trim and composure again.

But wait—all is not over. On return to the field the gear handle is placed DOWN at the break but glances at the nacelles revealed not so much as a cracked gear door on either one. We broke off the approach and pumped the gear and flaps down with the emergency system (some difficulty here in that the socket for the emergency pump handle had been badly bent and broken through prior improper use).

Landing and rollout was normal but upon nearing the line the brakes became very weak so we stopped and were towed into the chocks.

A check of the plane disclosed a massive hydraulic leak in the rudder trimmer cylinder. Four and one-half gallons were required to refill the system; this with the one gallon added earlier, made five and a half gallons of hydraulic fluid pumped out during the flight. Local speculation as to what occurred is that I had sprung a leak when I first started to taxi with use of the rudder trimmer (confirmed by a trail of fluid to the turnup spot) and all the use of the hydraulic system during the test part of the flight had pumped most of the fluid overboard. Then on the last "single engine," we had enough fluid and pressure to *unlock* but not enough to *actuate* the trimmer.

The trimmer now reacted to the right rudder as though the *rudder* were a tab. In short, with the trimmer free to swivel, the rudder was to the trimmer as a tab is to a rudder and the harder we held right rudder, the stronger was the "tab" effect in holding full left trimmer.

Several conclusions were reached as a result of this flight. First, don't taxi with the trimmer ON (believe the dispatches) and if this situation occurs, turn the trimmer OFF and "go with it" until things align themselves. Also if you have occasion to add hydraulic fluid under circumstances such as mine, be suspicious. This rudder trimmer stuff is great when working but it's grim when it fights you.

PANIC LIGHT?

WHILE in the pattern for over-the-shoulder bombing practice the fire warning light in my A4D-1 came on and stayed on. I immediately reduced throttle, checked TPT and RPM and checked in the rear view mirror for smoke. Everything appeared normal and the man behind me in the pattern made a thorough check with negative observations. We headed for home, about 25 miles distant, with everything apparently normal with the exception of the fire warning light.

I had never before landed the A4D with more than 2000 pounds of fuel but now I was carrying close to 6000 pounds which was within the allowable gross landing weight.

The tower cleared me downwind for runway 27 and I slowed, dropped gear and flaps, and started my turn at the 180-degree spot.

During this time I had been checking RPM, TPT and smoke, consequently I set myself up for a poor 180. I maintained 140 knots due to my fuel load, but at the 90-degree spot had to turn pretty tight tc make the runway. With 500 feet of altitude the rate of climb dropped to 3000 feet per minute down.

Immediately wings were leveled; 100 percent added and I prepared to pull up the gear. At 200 feet above the ground the rate of descent stopped but I had lost 300 feet in a matter of seconds. After the wave-off I determined not to repeat my mistake and set up for a good pattern with speed and a long straightaway. I hit the straightaway with about 400 feet altitude and reduced to 130-125 knots. Again the plane began to settle rapidly and it took full bore to stop it. I maintained 135 knots to touchdown and shut down just after touchdown. The fire warning light was still on.

I had allowed the fire warning light to occupy so much of my attention that I hadn't given sufficient thought to my approach, especially since this was my first heavy landing.

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HABIT

HABIT is a dangerous thing. I found that is an understatement when aviation is involved.

Put two instructors together in an S2F and things should go like clockwork. Halfway through the FCLP period we switched pilots (I was in the left seat this portion) and after climbing out following my first pass I noticed the plane was acting very sluggish. I was having trouble maintaining my altitude and airspeed and was settling.

The upwind turn was completed with me still trying to get set up properly. Coming downwind I completed the checkoff list by putting the props up and reporting same to my copilot. Approaching the 180 I was getting real cocked up. The airspeed was down to 95 knots and I couldn't get it slowed up. Then wheels began to turn and I began a quick check of the cockpit. Just as big as day—the flaps were UP!

Immediately I dropped full flaps and asked the copilot if he raised the flaps on our last touch-and-go. A doubtful negative was the answer.

The next landing was made without incident and as I added power the copilot reached his hand to raise the flaps, a habit that had been learned when shooting touch-and-go's with students. Fully realizing now that he had raised the flaps inadvertently the first time, he was all apologies. All was forgiven and another pass was started.

After the touchdown and upon application of power, for the third successive time the copilot started to raise the flaps. This time he caught himself but two instructors with over 4500 hours between them emerged slightly shook from this very vivid lesson.

We know that habits must be controlled and that positive action must be taken from completing the check-off lists to insure that they ARE completed when the pilot says to copilot, "Checkoff list complete."

SURPRISE

I WAS returning from a night simulated instrument hop when I broke for a final landing. I slapped the gear handle down at the 180 spot I gave the tower the usual "down and green." However about a thousand feet from the end of the runway I was greeted by a shower of red flares—sure enough my gear and my head were up and locked. The amazing part of it all was that it was a pitch black night and how the wheel watch saw that the gear was up still baffles me. I had checked my gages but the lights were turned so low I mistook the indications.

Anyway the wheelwatch got his reward and I was duly fined ($5) at our next squadron court, and got read off when a poem, below, appeared in our squadron news sheet. (*We now turn on our landing light at the 90—It won't work if the gear is up and it also lets all hands know where you are.*)

The TO-1 this pilot's first jet
The change came easy
With almost no sweat
1 thousand 6 hundred
He then had flown
Then on to Oahu, but now in a trance
Since the night at the 'O' club
The Tahitian girls danced
Had hours 35 hundred
The moment was here
Sharp in the groove, he really could fly
Then two red lights
Flashed through the sky
And 3 thousand 5 hundred
Had the leader that night
"WAVEOFF" screamed the towet—"WAVE-OFF"
Screamed his flight
Was all set to land
And no gear in sight
Over 3 thousand 5 hundred
Had the leader that night
Then to the ready room all soaking wet
Drenched down his front
And was it all sweat???
3 thousand 5 hundred
Had the leader that night
I'm sure you'll agree that "Wheels are must"
Ask any young pilot
Or—Ask a certain Major

THE PHANTOM POET
(abridged)

SILENT TREATMENT

THE two of us were experienced NA's and we were scheduled for a morning photo mission in F9F-8Ps. I was without film and was flying chase plane as lookout.

On previous flights the aircraft assigned to the flight leader had been downed for erratic operation of the static pressure instruments. But the last flight was a test hop by this same flight leader who found the instruments satisfactory. While briefing we discussed this discrepancy.

During the climbout the leader was never on climb schedule (both fast and slow). All I did was shake my head. Over the target his altitude would vary as much as 700 feet on a photo run. "He is not with it today," I mused. Cruising back to base he called me and complained that his plane was a "dog." I just shrugged.

On idle letdown VFR to the field we were slow and got slower. At 500 feet below break altitude we leveled off and the airspeed dropped 200, 180, 170, and still in idle too . . . enough! I put on plenty of power and roared by him giving him a go--go with my head and cussing a blue streak into my mask. Did I come up on radio and tell him he was dangerously slow? Or maybe his or my instruments were Off? No.

On downwind I felt I was gaining on him, but still didn't tell him he might be slow. All I did was turn late off the 180. I was still gaining on him and in the groove he settled fast, hit short of the runway and bounced onto the runway. Then came the dawn: His *pressure instruments were still inaccurate.* All I did was criticize and never once did it occur to me that with a little teamwork (airspeed check) we could both be alerted to a very dangerous situation.

My comment: A wingman must never adopt the attitude of being along for the ride but must constantly be alert to warn the leader of an unsafe situation.

JAMMED CONTROLS

ON TAKEOFF in an AD-5 the elevators failed to respond to normal pressure to lift the nose into climbing attitude at a point beyond a safe refusal speed. Much heavier pressure on the stick was used together with trim and finally the desired climbing attitude was established.

At a safe altitude the controls were moved to their limits and came free. From then on the controls felt normal and a slow flight check was normal.

After landing the night check crew inspected the airplane control system and found an ash tray from the ECM station crushed and lodged in the pilots controls. An inspection of other aircraft showed that none of the ash trays were secured with a chain or cord of any type. On one airplane an ashtray was found down between the floor and side of the fuselage, riding on the cables. Needless to say this situation is being corrected.

SHOULDA STOOD

"THIS hairy tale didn't happen to me but I was associated closely enough with the incident to get the details. Involved were four pilots planning a Saturday morning cross-country in F9F-8s. Two of the pilots were recently out of the training command and needed the cross-country time.

"The flight was scheduled to go as sections but due to aircraft availability on the particular day only three planes were available. Since the weather wasn't forecast to be bad, it was decided to send the two young pilots as wingmen with one of the more experienced pilots as leader.

"Takeoff time was 0800 with the field weather about 800 and 2. Actual weather was thin clouds and layers to estimated tops of 25,000. Takeoff was made in V formation and the flight commenced an ADF climb, to reach high station at 20,000 feet. The formation held well on entry into the soup but on the right climbout turn, the leader lost his birddog and passed the lead to the right wingman.

"The change was made with little difficulty; however, the number 2 leader did commence a left bank before becoming orientated on his gages. The number 1 leader slipped to the right wing and the climbout continued.

"Then ATC reported the tops to be 33,000 feet. High station was passed and a new climbout begun while awaiting a change in clearance. Now the transmitter of the number two leader went out and his receiver operated intermittently. He decided to get rid of the lead and tried to interest the left wingman in the job.

"Earlier the left wingman had noticed that his gyro precessed badly so he didn't want to have anything to do with the program. He refused to acknowledge the signal so the radioless number 2 leader throttled back to slide closer to him. Meanwhile the number 1 leader was also frantically making with

Continued from preceding page

hand signals to pass the lead. Finally 'lefty' took over but by now the number 1 flight leader was convinced the hop should be aborted so he called for a penetration back to the field. Unfortunately, the second leader did not hear this new plan.

"The flight was now in loose formation; the soup being thin with about one mile visibility but with no horizon. The turn back to the field started out as a gentle right turn but about 90 degrees later the number 3 leader noted his gyro tumble. He immediately passed the lead to the first leader and banked to the right, attempting to pass over the number 1 leader who was on the right wing.

"Second lead looked on in dismay as the third lead overbanked, rolled inverted, then proceeded to split-S. Number 1 lead also rolled inverted and appeared to split-S behind number 3.

"Number 2, radioless, decided to follow the crowd so he honked on down, trying to keep number 1 lead in sight. This he did and eventually joined on him. They got back to the field in section, penetrated using number 1's ARA-25, and landed.

"Number 3 leader apparently spun down out of his split-S and after several seconds saw his altimeter unwind to where a crash was inevitable. As he debated whether or not to eject, the needle went through zero! No crash however, for it was 10,000 feet rather than ground level. He recovered VFR when about 8000 feet and limped back to base. Finis Flight.

"Postflight comments included these: If the flight had been briefed on radio failure procedures, things might have worked much better.

"The number 1 lead could have maintained the lead and completed the climbout with ADF information passed from the wingman via UHF.

"Three-plane IFR flights are not recommended unless all pilots are well qualified. One of the inexperienced men shoulda been left behind."

THE HARD WAY

"IN MY 1500 pilot hours I must have called the tower for 'taxi' hundreds of times, listening with 'half a head' and checking circuit breakers and gages with the other half.

" . . . cleared to the warm up area, runway 11 . . . and away we go! But about that time the radios fade and you can't get a tone when you key the mike. Oh, well, maybe a circuit breaker popped.

"A look shows them all in place but here we coming up on the warm up area, runway 4 . . . Now let's check this . . . Uh, what runway?

"Out of the corner of your eye you suddently get a glimpse of the biggest P2V you ever saw, trying to stand on its nosewheel! Slowly the light grows brighter. You've crossed the duty at high noon and lucked out. The P2V was able to abort his takeoff run and in a little while a lil' ole follow-me truck will take you by the hand.

"With visions of long green tables, stern faces, hard words, and dozens of statements to sign, you've learned: The hard way. Listen to what the man in the fishbowl says and further, *know* what he said. Then do it."

COCKPIT CONFUSION

"AFTER reaching the designated target I began a 4G 'Idiot Loop' in my F9F-8 to simulate toss bombing. I pulled back stick and though the G-suit inflated mightily the accelerometer indicated only 3.5, so more and more back stick was pulled with negligible effect on the accelerometer.

"When I finally unfixed my stare from the horizontal trim indicator and scanned the actual accelerometer, I found I had pulled 5G plus."

BREAK

AFTER an orbit around the air station in an F9F-8P I was turning into the slot at three miles when a TV-2 descended from above into the same slot and a near mid-air was recorded at one mile from the duty runway.

Pilots should be cautioned against letting down blindly into the break and should be at established break altitude prior to entry into the slot. For me the desired practice would be to enter the break orbit at a 45 degree angle or less to the target, at break altitude.

Headmouse would like other suggestions on this score.

BACK-UP

THE incident took place in an S2F during night FCLP after I had received a cut from the LSO and landed. The paddles were set up so that there was 2000 feet to the end of the runway.

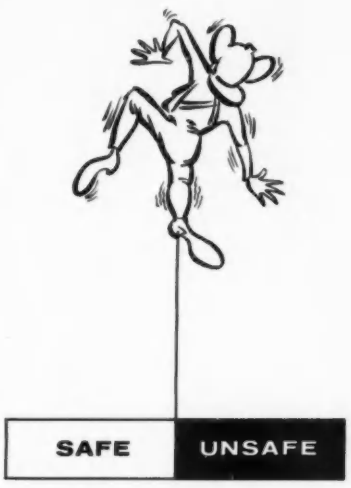
I added power to commence an-

other pass then a swerve to the right started. At the time of the swerve there was not enough runway remaining to abort so a single engine takeoff was made.

Gear was snatched up as soon as safely airborne and the flaps milked up as per doctrine. A downwind entry to the pattern was made and an uneventful single engine landing followed.

The cause: The copilot had inadvertently pushed the feather button when backing me up on the throttles!

Note: Feather buttons have been modified on the DASH THREE, and a service change will retrofit all S2Fs and TFs.



FINE LINE

"I WOULDN'T be caught dead in that—poopy suit!"

If only the guys on the ship who always say these words knew how true they are! "That poopy suit" was made and bought to *prevent* them from being caught dead.

I'm opening my steam valve and relieving a little pressure after reading and thinking about the chart printed on the back cover of November '57 APPROACH. It shows the varying lengths of expected survival time, according to the water temperature, for a man in the water without an exposure suit. The section of the chart which concerns me most is the 60° to 70° separation. Without an exposure suit, a man has a 50-50 chance of losing consciousness after two hours in 60° water. People concerned with establishing aviation safety policies have lately been harping on the subject of individual differences and physical *tolerances* when it comes to survival and aeromedical difficulties. Who can speak for himself and say whether one can take one, two, four or six hours in water of a given temperature? No one!

Another item for thought is the fact that newer all-weather carrier-based aircraft will have increased operating ranges from the force, and will also be flying in most of the bad weather. Will the pilot who ejects or ditches under these conditions (poor weather, and say, 100 miles from the force) be picked up in two hours? It's not likely. Even though he'll probably be able to enter his raft in a comparatively short time, he would be much more comfortable with the "bag" on than without it. (See "Cold Feet"—November '57 APPROACH.)

Policy now is to wear the exposure suit when the sea temperature is *below* 60° F. A sight that gripes me to no end is to sit in the readyroom before a launch and watch pilots eagerly waiting for the BOW WAVE, which might put out the word that the ship is steaming through 60° water. Why make the dividing line at 60°? One lousy degree shouldn't be used as an excuse to leave the suit behind.

After observing the figures in the above-mentioned chart, it seems to me that if there is going to be such a fine dividing line for "to wear or not to wear", it should be 70° and not at 60°.

Anymouse Safety Officer

NO BRAKES

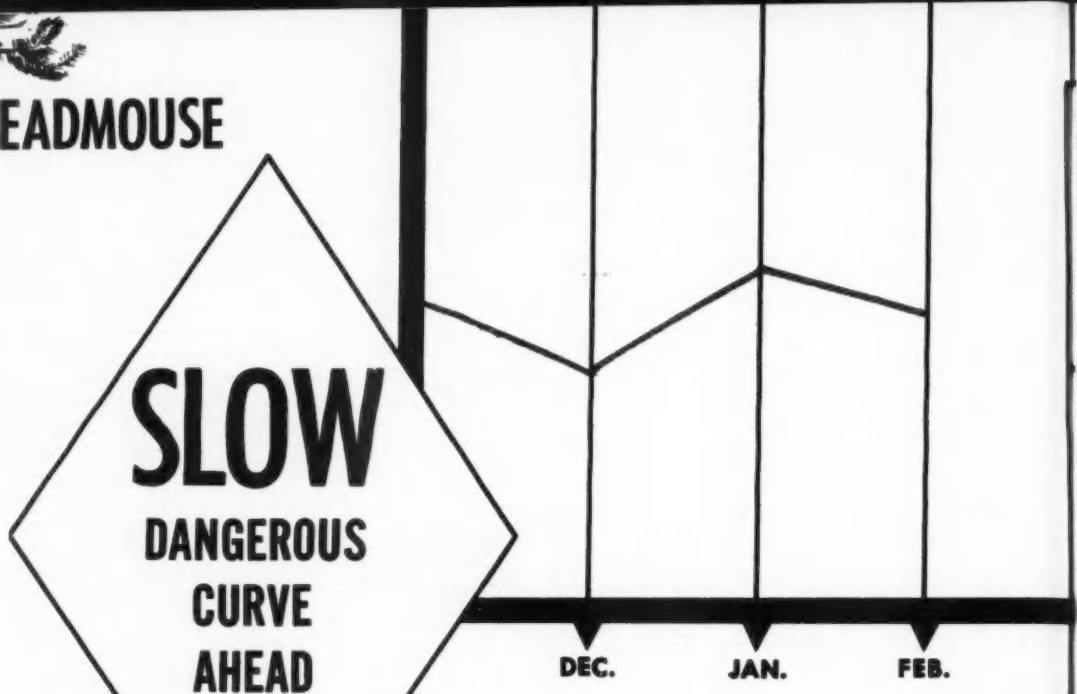
"TWO of our local pilots started their S2F, finished the pre-taxi check and began moving out of the chocks. The pilot let the aircraft roll for about 5 feet at which time he tapped the brakes to test them, the normal procedures used in this unit. At this time the left brake held and the right pedal went to the floor.

"Repeated pumping of the pilot's starboard brake did no good and the aircraft began a swerve to the left. Pulling the emergency brake helped very little and the swerve continued. The copilot feathered and secured the engines and the beast finally stopped, with the port propeller about 12 inches from the starboard wing stub of another S2F.

"Subsequent investigation revealed the shuttle valve to be defective and also revealed that the copilot's brakes were satisfactory and could have been used if time had permitted."

New procedure calls for checking brakes both in the chocks, and just after start of roll—with copilot prepared for anything including applying his brakes if the pilot's fail.—Headmouse

HEADMOUSE



For years January has been a "bad" month—more years than can be attributed to coincidence. Headmouse here unburdens himself of some thoughts—both original and contributed—on the subject of how to get rid of a Dangerous Curve. Or better yet, how to turn it downhill.

You don't normally wait until you're half-way 'round a curve before you begin to do something about it, do you?

Whether you drive in a Mexican road race or around the corner to the supermarket, you make some allowance for a dangerous curve *before* you get into it, and that's exactly what I'm concerned about for next month — we've got a Dangerous Curve ahead.

For the past nine years I've watched the aircraft accident rate curve take a turn upward from December to January.

Looking closely at the four-month period from November through February, I found that the *average* rate for the winters of 1949-50 through 1957-58 took a dip in December, went up in January, and then dipped again in February. The actual average rates portrayed on the graph shown here, are 4.6, 4.2, 4.8 and 4.6.

What happens in January that makes this "dangerous" curve in our accident statistics?

That should be easy to answer, you think—it's just cold weather plus the holiday layoff combining to cause more accidents. Well, not entirely, for December and February are pretty equally cold months. I think the greatest part of the blame must rest on the second half of the reason—holiday layoff.

The Christmas holiday season with its attendant maximum leave conditions puts a load on aviation safety in several ways; it takes some of the keen edge off a pilot's flying ability, and it takes some of the keen edge off his airplane and the care it gets, through reduced activity and decrease in maintenance attention.

Oh, I don't mean that the planes don't get the same loving care, but the maintenance manpower is spread thinner, some of the recurrent gripes that a mech gets to know—just like your family doctor knows all about your back that acts up in damp weather—those gripes are off on leave with the mech. He deserves the leave, but the gripe

doesn't, it should be getting the personal attention that it deserves. But the maintenance gang is short-handed, it's the holiday season, and some things are bound to suffer from changes in working personnel, absence of key petty officers, and more dependence on relatively untrained men.

Even if no one comes near the airplane, it suffers something just by standing idle in the barn for a few days — anyone who's worked on radars, for example, will tell you how they act up (or don't act at all) after being idle for a while.

What to do? Well, there's a lot that can be done in the right direction—if it's planned and started NOW, right now in December, so that pilots and ground personnel returning from leave can be worked back "into shape" with safety.

First and perhaps the most important thing everyone should do is to KNOW that neither he, nor others, nor airplanes are quite as sharp for a while after leave as they were on the day they signed out. Just knowing that, and the dangers associated with that fact, can go a long way toward making people just a mite more careful, checking things a bit more thoroughly than they normally do.

Scheduling of flights can be a real important contribution too, if it's planned *now*. A relief pitcher warms up before going in to play, so does a substitute quarterback. Even I don't try schussing or gelandesprunging the first time I wax up my skis after a layoff. I do a bit of beginner stuff and get the feel of the boards first. Same with flying, a layoff of even ten days is bound to leave you just a little less hot, and if you don't have too many thousand hours to begin with, well . . .

I'll bet that you can actually make that curve dip downward instead of upward any old January that you want to, just by preparing for January in December. Instead of planning to pick right up on the next scheduled hop, how about having the boys back off and put in an easy fam or two, same thing you'd give them if they had just reported aboard and you wanted to be sure they felt comfortable in the plane and the area. An instrument training flight under simulated conditions might be a good second hop.

A man loses touch pretty rapidly when he's away from things, but it's amazing how rapidly he regains touch too; after a couple of refresher hops with no near-limit maneuvers, staying pretty near to home plate, he's got the feel of things again and is ready for low-level butt-busters and loft hops. I can't stretch my imagination enough to call loft maneuvers a "warm-up" flight.

As for the maintenance people, it's a little harder to work them back into the "holiday-is-over" spirit . . . there's no such things as "easy" or "refresher" maintenance. In fact, the days right after the holiday leave period are often the most hectic for them; planes lying idle have suddenly generated a whole new batch of squawks; ops wants maximum availability; umpteen service changes came in along with the Christmas cards, and the night check chief's been transferred to recruiting duty! What could be worse? Why, a carqual deck available this week, of course!

The maintenance people returning from leave are just a bit less sharp too, and they're facing an entirely new set of squawks that may or may not be helpful clues. Do those "extra projects" *have* to be picked up again the very first day after leave? What can you do to help them work back into the groove again without generating a panic situation before they've even had a chance to switch from blues to dungarees?

Extra care must be paid to "turnover" information as the returning men are briefed on "how she ran while I was away." Supervisors should see to it that they aren't casually tossed a whole pile of unintelligible squawks and jobs by someone who's anxious to be rid of the papers—and the responsibility.

Carrier landings — there's an area that's contributed its share to the January upswing in the accident curve. A study made over a three-year period, from September 1954 to August 1957, revealed that the composite carrier landing accident rate was highest in — you guessed it — January. Nearly five times higher than the lowest month, June.

What do you do with carrier landings? Can't schedule "refresher" carrier landings before going out to do carrier landings, cause that's what carquals are for anyway. FCLP? I hope every carqual period is preceded by a goodly amount of FCLP already, so you can't do much more to prepare for carrier landings than that.

Or can you? Maybe the Op Order is partly to blame—I wonder if op orders take a holiday leave period into account? Or do they schedule a full day of operations the first day out of port, with a heap of night flying to top it off? Well, I'm not about to tell the Admiral how to run his task force, but I'm not bashful about dropping a hint that you can't run a horse in a sweepstakes the day he concludes a cross-country trip in a horse van. You know he won't win, place or even show.

Without sacrificing readiness or operational commitments, I think it's possible, about 98 percent of the time, to schedule a realistic "get back in the groove" period of a few days after an extended leave period, especially if you're convinced, as I am, that it will contribute to greater aviation safety.

Very resp'y,
HEADMOUSE

Have a happy, SAFE Christmas, and a happy, SAFE New Year—

truth and consequences

A REVIEW OF SIGNIFICANT AIRCRAFT ACCIDENTS

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Judging from the conversation carried on with other pilots in the readyroom the two visiting SNB pilots were anxious to get back home.

One pilot's children were in a Christmas play that night and he wanted to attend. The other pilot had close relatives arriving for a holiday visit and he wanted to greet them.

Season's Greetings

IT HAD been a grey overcast December afternoon when the SNB arrived at *Big Town* airfield. During the 120-mile trip from NAS *Home Base* the weather had been marginal VFR with patches below VFR minimums in rain and haze. Also during the trip, it was found that the ADF was not working properly. No mention of the discrepancy was made to line or maintenance personnel.

However, both pilots were green card men who had made the same trip many times, had been stationed in the area for a year, and were considered thoroughly familiar with the country. The pilot had close to 4000 hours and the copilot over 2000 hours.

NAS *Home Base* weather was given as estimated 2000 broken, 10,000 overcast with four miles visibility in light rain and fog and was forecast to remain the same. A VFR flight plan was filed direct from *Big Town* airfield to *Mid City* then direct to NAS *Home Base*, this resulted in a single heading course. On the DD 175 the time en route for the 120 miles was estimated at 1 plus 10 at a TAS of 140 knots.

When considering the wind direction, both observed and forecast, a discrepancy appears in the pilot's estimated time en route.

At 1000 feet the wind would give almost a direct tailwind at 18 knots. The pilot had selected 2000 feet for his flight altitude and at this altitude there would have been a quartering tailwind from the right at 30 to 40 knots. It had taken only 1 plus 03 to come from NAS *Home Base* yet in spite of tailwinds for the trip back, which should have reduced this time, the pilot increased it to 1 plus 10.

A little more than half an hour of daylight remained as the *Beech* lifted off the runway at *Big Town* airfield and swung away on course. An hour and eight minutes later the aircraft was burned rubble on a fog shrouded hillside. The crash site was well to the left of the intended track and some 40 miles beyond NAS *Home Base*.

Actual weather encountered by the SNB until just before the crash was unknown but the pilot of an R4D, also bound for NAS *Home Base*, had taken off immediately ahead of the SNB and later reported on the en route conditions. "Our flight was routine," he said, "until we entered the area beyond *Mid City*. Here we met seven-tenths broken clouds with tops of 2500 feet. We went on top VFR and remained VFR on top for about 10 minutes. Then we came to a large cloud-free area and descended VFR to below the cloud base which was at 2300 feet.

"We cruised under the cloud layer at 2000 feet until reaching an intersection 20 miles from NAS *Home Base* where we decided to go IFR. After getting a clearance for 2000 feet we entered the cloud area and went into the overcast at 2000 feet. Also we noticed high wind velocities. After passing the NAS range station we suddenly broke out in clear weather at 2000 feet, cancelled GCA and made a normal approach and landing."

There were no radio contacts with the *Beech* en route but after the plane had been airborne 56 minutes the NAS *Home Base* tower operator heard two radio calls from the *Beech*. The calls were very weak and garbled and though they were answered in each case by the tower no acknowledgment was ever received from the aircraft.

Five minutes later a witness on the ground saw an aircraft overhead at approximately 300 feet altitude.

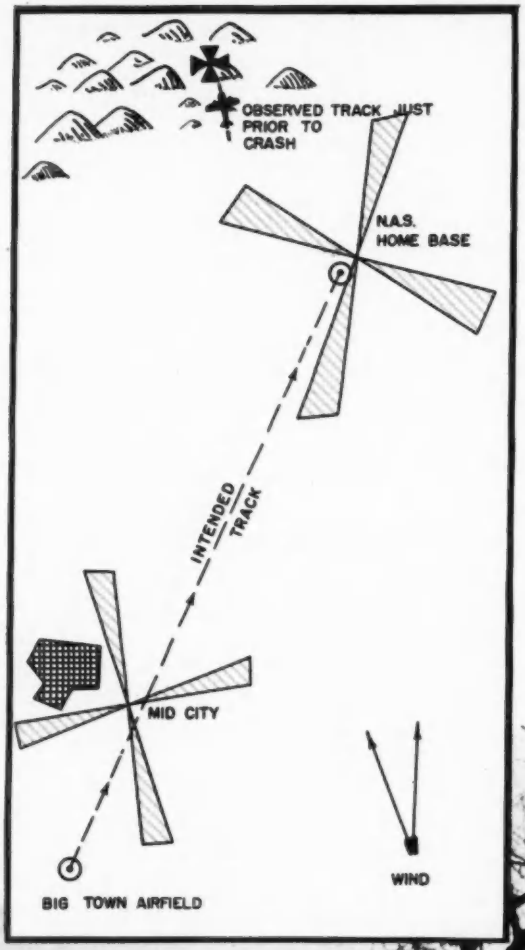
The weather in this area was light rain and visibility of about one half mile. Several minutes

Continued from preceding page

later two witnesses heard an aircraft pass overhead very low. The weather was fog. The two witnesses were about five miles from the crash site. A witness one mile from the crash site heard an aircraft approaching very low over his house and ran outside to look for it. Looking toward the sound the witness saw a flash of light as though from an explosion. Shortly thereafter an explosion was heard. The weather at the time was heavy fog.

Initial contact was made with tree tops at an elevation of 1035 feet MSL in level flight. Speed upon ground impact was estimated at 135 knots.

In the opinion of the board several of the contributing factors in this accident were "Get-home-itis" and the fact that due to the short distance of the trip, there was a laxity of utilizing navigational equipment to the fullest extent.



Disoriented, the pilots attempted to maintain VFR. Broken tree tops (circled) mark the initial impact of the SNB before it struck the fog shrouded mountain slope and burned..

SMART AND SNAPPY—"A smooth, coordinated clearing turn (after launching) has been and still is required of all pilots," said the Air Task Group Commander.

"However, it has been emphasized that a violent, radical turn is much worse than no turn at all . . . "

The accident which occasioned this statement involved a young (age 23) pilot with a little over 600 hours. He had 200 hours in the *Cougar* with 21 catapult launchings, the first 17 of which had been made with light fuel as required for CarQual. The last four had averaged 19,600 pounds.

Immediately after being launched on his 22*nd* shot the pilot raised the nose, retracted the gear and rolled rapidly into a 60-degree right wing down bank. At this angle and weight (19,600 pounds) the stalling speed is over 149 knots, according to the accident board and two G's are required to maintain altitude. TAS of the F9F-8B at this point was estimated to be 145 knots.

Upon reaching 60 degrees of roll, flight deck and bridge personnel reported the jet seemed to hesitate slightly and continue to roll to an estimated 100 degrees right wing down. At this time full left flaperon, full back stick and left rudder was applied and the *Cougar* slowly commenced to right itself as it scooped out of the severe bank. Finally the wings were brought level but a very high sink rate had been established and the jet continued settling until it hit the water and disintegrated.

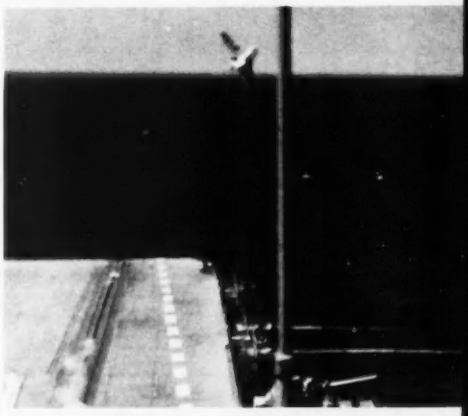
Reviewing the aircraft history for any possible control surface difficulties produced negative results and the catapult was operating properly with suitable pressures.

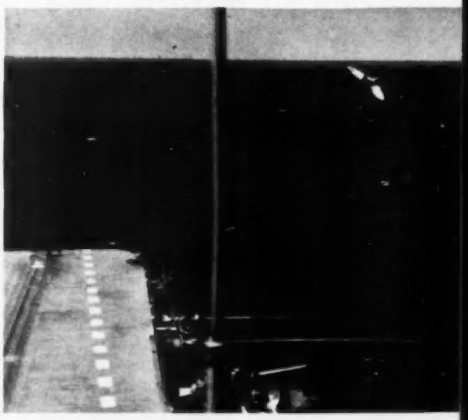
A review of the pilot's flight record showed his performance to be generally average to slightly above and no dangerous tendencies were disclosed. However a squadron mate recalled that on the day prior to the accident the pilot, in his zeal to perform a snappy clearing turn, allowed his aircraft to reach an angle of bank close to the vertical. Upon completion of the hop the pilot was questioned on his actions and he replied that it was his clearing turn and that he had "got a little wrapped up."

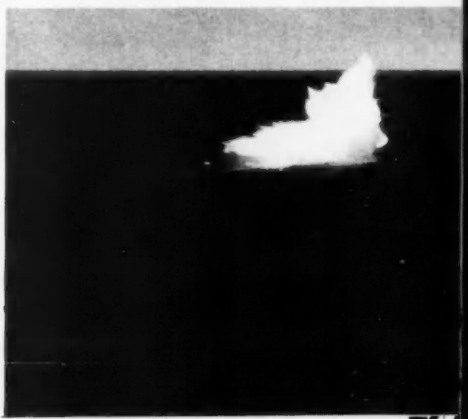
It was Air Task Group policy to use a senior observer for each launch and recovery and to make his comments a part of the normal de-briefing of the flight. Due to momentary distraction, however, this maneuver had not been observed by the squadron observer and the matter ended in the brief conversation between the two pilots.

Most of the recommendations made by the accident board are basic; perhaps so basic that they may be overlooked from time to time. Nevertheless their importance is shown by this loss of a pilot and his aircraft.

- Stress to all pilots the importance of smooth flying techniques and careful manipulation of the controls immediately after takeoff.
- Ensure that all pilots establish a habit of deliberate "Clean-up" procedures after comfortably airborne.
- Ensure that all pilots execute the "clearing turn" at no more than 30 degrees of bank, applied without haste.
- Ensure that qualified observers be stationed where they can observe all launchings and carrier deck techniques and that these observations be promptly and positively brought to the attention of the pilot concerned.
- Ensure that all pilots are familiar with pertinent Vn diagrams, stalling speed charts, swept wing characteristics.
- Ensure that all pilots are familiar with the handling characteristics of the aircraft at various fuel loadings and configurations.







On the day prior to this sequence of photos the pilot had wrapped up his clearing turn but was able to recover. Not this time!

PROPHECY

by James R. Custin

Reprinted courtesy of Air Facts

If you want to know what really happened, go back to May 6, 1902 and plug in on this conversation.

WILBUR: I've been doing some thinking and I don't believe this airplane idea we've been working on is such a good idea. Best thing to do is to forget it.

Orville: You going ape on me or something? Those glider tests we made last month were perfect. We've got our airfoil and propeller theory wrapped up cozy, we've got the stability and control problems flat on the mat, and our gas engine is all finished and is just what the M. D. ordered. Man, we've got it knocked.

Wilbur: Yeah, but what about flying it?

Orville: So what's the problem? That stick and rudder control arrangement you worked out is a honey. You give a student eight or ten hours of dual and he's fat.

Wilbur: Sure, but what'll be happening during those eight or ten hours? The student is sitting there pushing those controls through little bitty movements

and the instructor is yelling at him, "You're overcontrolling, you're using much too much pressure, let's not try to turn this bucket inside out." Then he's taking it nice and easy on the stick, coming in for a landing and the instructor will be yapping at him to get that stick back, get that stick back, are you waiting until we bounce over the hangar? The poor student will be working like a dog and going rapidly nuts, and meanwhile the instructor sits there telling him relax, ree-lax! Hah! A flight instructor would be good for barely four hours before some student would kill him in cold blood. No sir, flying just wouldn't be safe, and that's all there is to it.

Orville: Well, maybe you've got a point there. But somebody would be learning to fly or where did you get that flight instructor from?

Wilbur: So all right. So we invent the airplane and people learn to fly it without doing violence to each other. Then they're going to want to use it in 500 and 1 conditions, and that means the pilot will have to fly the thing strictly on gauges. To figure out which way is up he'll have to be watching five different needles, all of them telling him something different. It'll drive him crazy. Besides, how will he know where he is?

Orville: Easy. We'll have us a radio navigational aids system. We'll also have a bunch of people on the ground to give the various airplanes clearances so they won't tangle with each other while they're ginning around in the soup.

Wilbur: Yeah. And some day some poor birdman is going to be sitting up there in a holding pattern east of the south leg of one of your radio ranges with an expected approach time ten and one-half minutes hence. He's got one ear on approach control and one on the range, and he's trying to bracket the leg to get his crab angle so he can figure the wind. While he's working out his headings he has to maintain his airspeed and altitude and figure out one minute for each turn is two minutes, and I've got two two-minutes legs in another four minutes totals six, and ten and half less six is another four and a half minutes to kill. Meanwhile, approach control is telling him to let down to three thousand, report leaving each thousand foot level.

Orville: I see what you mean, boy. If God had intended for man to do all that mental arithmetic He'd have given him an adding machine instead of only ten fingers.

Wilbur: Roger dodger. Now you see why I'm saying that the idea of inventing the airplane is silly when you look at it right.

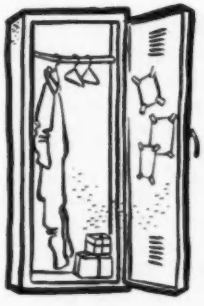
Orville: Affirmative. Best we forget the whole thing. Let's go burn the shop down.

Wilbur: Lead on, Lad. I'm bringing the matches.

* * *

And that is why, in June 1902, Wilbur and Orville Kediddlehoffer founded the biggest buggy whip factory east of the Mississippi.

Proving that you have to have lots of foresight.



WHIZ QUIZ

1. How many people are supposed to see each copy of APPROACH?
2. In the "back-pressure armlift" method of artificial respiration, which motion comes first?
3. Should you leave your exposure suit behind on overwater flights if the *air* temperature is over 60°F?
4. What is the biggest cause of hypoxia?
5. What is the best first aid for frostbite and chilling?
6. In ejecting, if you release the lap belt by hand, what about the parachute?
7. How can your dinner or your wife's cosmetics affect your LqOx supply?
8. What maneuver most often leads to a wheels-up?
9. What is a decibel and how many of them does it take to hurt you?
10. What is the best attitude for low-altitude ejection?

See Answers on page 40

MAN TO MAN

At every level of maintenance there are supervisors. We know that because they are assigned as such or wear badges that say they are. But then again, are they? Do these personnel know what really goes into making a good supervisor?

YEARS ago a supervisor was *the* man who went about issuing the orders and guaranteeing they ordered to work—or else!

But, as everyone keeps saying, times have changed. Today it is the day of psychology, using tact rather than out and out orders. The old timers in the service can be pin-pointed by their complete disgust with this system, but most of them go along with it as one of those changes that is part of progress. Progress is one of the inherent advantages of being part of the United States Military. No one is content with what he has and is always striving for something better and for improvements on the old systems and styles.

Photo Courtesy of Douglas Aircraft Company

A squadron with a vitalized training program, one that is up to date and well planned, is a squadron well on the way to outstanding availability, maximum flight time and the ultimate in awards for safety.

These changes also affect the way in which the supervisor must attend to the matter in which he delegates work, acts as advisor to his personnel and welcomes new men to his fold. *Always* he must keep in mind the ultimate goal that of the benefit and promotion of his squadron.

The task of being a supervisor is not an easy one. There are two basic requirements that must be met. They are: he must be acquainted with and aware of all directives concerning his basic job (i.e. mechanic, electrician, electronics, ordnance, . . .) and also those phases dealing with personnel accounting and handling. He must have a knowledge of the supply system and an acquaintanceship with all of the other jobs that border on his. This is the reason that most supervisors are the old timers who have been around a while and have had the opportunity to become aware of all the problems and solutions in these various categories. The other prerequisite of a supervisor is that he consider his team's welfare and problems. Definitely the supervisor himself has problems, but he has the working knowledge to cope with them. His junior men do not. He must be available at all times to assist his men in situations that arise that would tend to infringe on their availability and skill. A good supervisor does not let his personal feelings interfere with his attainment of the squadron goal. Personal feelings are for after working hours.

One of the most critical moments for a new man

Continued from preceding page

entering a squadron is the day he first reports to his supervisor for work. *How do you greet him?* Is it just a curt 'Pvt Jones, you're assigned to check crew 3. You'll find them working on plane number 7. Get with it.' This man doesn't even know what door leads to the hangar, yet the supervisor expects him to find a particular aircraft and check crew. How much time and effort would it actually cost for the supervisor to introduce the man to the maintenance officer and the check crew leader? Then in turn for the check crew leader to introduce him to the rest of the crew and buy him a cup of coffee while he explains what is expected of him? What a far better way to start in a new squadron. Here is a man who would realize that he is a person in this squadron and not just another warm body.

Another task the supervisor at all levels must face is that he is responsible to see that all the men in his section are trained in their assigned duties to the limit of all facilities available and that the training is a continuous thing, not just because there is an inspection coming up in a week or so.

Would it not instill in this man a closer feeling for his job? Would it not make it easier for his promotion exams? Does the supervisor recognize the conscientious man and let him know that he appreciates his interest, but NOT at the expense of the disinterested?

Does he, through his training program, attempt to instill in each and every man pride in his job, his seniors and his squadron? Training CAN do this if it is properly arranged and outlined. Nothing can destroy the will of a man to work more than to sit in on a lecture that is 'spur of the moment,' repetitious and boring. He loses interest in everything concerning his job.

A squadron with a vitalized training program, one that is up to date and well planned, is a squadron well on the way to outstanding availability, maximum flight time and the ultimate in awards for safety.

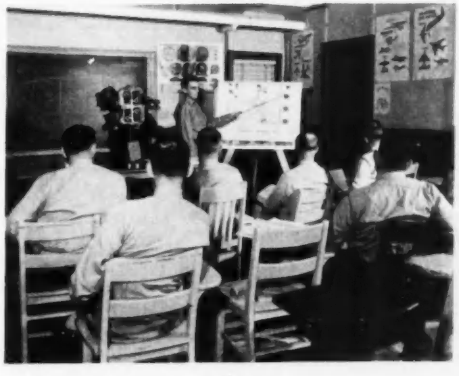
The supervisor must be able to manage his team to get the utmost from them. He must be able to delegate his authority without losing it. He must be able to plan his work *in advance* so that maxi-

mum utilization is made of the men assigned. The supervisor must be a planner, organizer, coordinator and personnel manager. This does seem to be an almost impossible requirement, but in today's theories of getting the most for the least, these requirements are a basic necessity. Each and every man is assigned to a particular job. If he does not fulfill that job to his utmost abilities, then the whole squadron program falters. There are not enough men qualified in each job today to be assigning people to duplicate tasks to cover for one man who doesn't pack the gear to fulfill his assignment.

Please turn page

Most old timers "go along" with those changes which are a part of progress . . .

At all levels . . . the supervisor . . . is responsible for the training of his men.



A properly arranged training program will instill in each man pride in his job, his seniors and his squadron.

The supervisor must plan his work in advance . . . so that maximum utilization is made of the men assigned.

The following questionnaire vividly points out the tasks of the supervisor.

Continued from preceding page

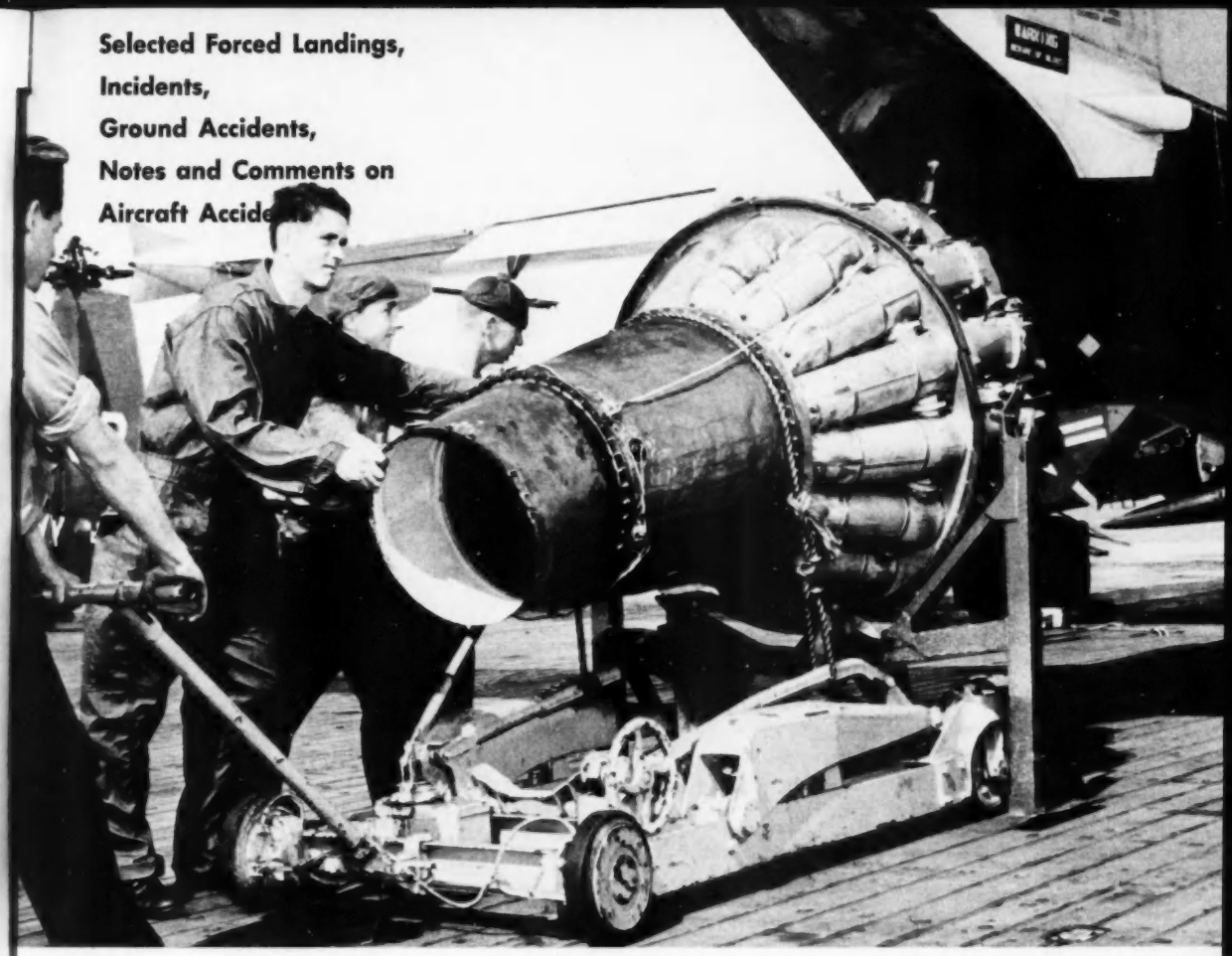
DO YOU:

- Make sure newly assigned personnel know and understand the local rules and regulations regarding ground safety, maintenance policies, duty hours, uniform requirements?
- Hold regular meetings with your people to talk over new or revised maintenance directives and policies?
- Hold regular safety meetings?
- Assign specific duties to individuals?
- Delegate authority to assistants?
- Discipline as necessary?
- Bawl out in private only?
- Enforce all directives and make sure your people comply?
- Schedule leaves and passes by talking with your people so everyone gets his fair time off?
- Insure leaves and passes are scheduled evenly through the year so there are no periods of minimum present?
- Discuss good as well as bad points with your people, individually and privately?
- Answer the questions your people ask you, or if you don't know, find the answer for them?
- Review your workloads frequently to insure that first things come first?
- Replan or reschedule work insofar as you are permitted to get the most done with your assigned people and equipment?
- Insure that all required parts and supplies are on hand or on order?
- Frequently check the tools and equipment of your function and insure that all necessary maintenance, repair, calibration, etc., is accomplished when required?
- Insure that the hand tools of your personnel are serviceable or turned in for repair or replacement?
- Insist on quality work from your people?
- Require re-do if work is not up to quality standards?
- Accept suggestions from your people relative to job improvement, improving working conditions?
- Make suggestions for improving procedures, policies or directives?
- Investigate poor performance and help to correct the cause of the condition?
- Ask for help from the aircraft maintenance section, wing, when desired or necessary?
- Ask for support from other maintenance activities as necessary?
- Insist on economy?
- Check your people to insure minimum waste of time, supplies, equipment, electricity, water, etc.?
- Keep records of overtime by each individual so that pass time is fair?
- Review your manhour reports to learn where your activity can be improved?
- Recommend T.O. changes where justified?
- Frequently check work in progress and work completed to insure satisfactory quality and craftsmanship?
- Know and use the wing established time standards for jobs done by your activity?
- Know the method by which you are to get supplies?
- Regularly visit the maintenance control activities to check on the records and reports pertinent to your function?
- Last but not least, *set a good example for your men?*

NOTE: *Any answer but YES indicates an area of weakness in your supervisory activities. These are the areas to be concentrated on for improvement.*

(Adapted from 3rd MAW "WINGTIPS")

Selected Forced Landings, Incidents, Ground Accidents, Notes and Comments on Aircraft Accide



FROM THE GROUND UP

EQUIPMENT USAGE—During the first half of fiscal year 1958 alone, ground accidents, the majority of which occurred by collision between ground equipment and aircraft, caused about 8 million dollars in damages. Losses from misuse of equipment amounted to many more thousands of dollars.

In recent months reports of deficiencies in aircraft ground support equipment have been received by BuAer. The several causes of these deficiencies are: allowance shortages, production delays, varying degrees of repair part shortages, maintenance and repair deficiencies, limitations on funds for procurement and repairs, plus other miscellaneous causes. BuAer says positive steps are being taken as quickly as the specific problems can be identified, but action by BuAer can only partially solve this issue.

One major degenerating factor is common to all equipment deficiency reports being received—*misuse of equipment by operators.* This misuse is apparently due to the lack of training plus outright carelessness. Directives which have sought to reduce this problem have been issued at every level of fleet, training and shore establishment command, with disappointing results. Eight million dollars, several men killed and injured; these losses directly detract from the ability of BuAer to provide adequate support to fleet and training units.

A program of improved training and active

Continued from preceding page

supervision at command level has been suggested to provide immediate benefits in terms of better equipment availability and utilization. BuAer has made arrangements to provide force commanders with the services of manufacturers' technical representatives for operation and maintenance instruction in equipment that has been particularly troublesome. Maximum use of these specialists for indoctrination of fleet equipment operators is recommended and the bureau is prepared to act favorably on force commanders' requests for representatives' services on other equipments not presently covered. In addition, the bureau is seeking to increase the instruction in ground equipment operation given students at "A" and "B" schools of the Technical Training Command.

The remarkable results of the current revitalized Flight Safety Program with designated Aviation Safety Officers reporting directly to the Commanding Officers of each fleet squadron are well known. This program could be extended to include major emphasis on ground safety. The designated Aviation Safety Officer could be assisted by senior petty officers who would be responsible for policing the flight line. They would arrange additional training courses where needed, prepare examinations and licensing of self-propelled equipment operators and keep records of the qualifications of all squadron and unit operators.

If these training programs were now instituted on a service-wide basis, no doubt there would be remarkable results in improved performance.

MELTS BALANCE WEIGHTS — Two A4D-2 aircraft were taxied up close behind the blast deflector of the number 3 catapult, awaiting a night carrier launch. A4D No. 1 was taxied in close behind and to the left of A4D No. 2. The tailpipe of the forward aircraft was approximately five feet directly ahead of the right wing tip of the after aircraft. The forward aircraft was holding about 70% rpm and the two planes were in this position for about two minutes. The starboard wingtip of the after A4D, No. 1, was severely scorched and the top formation light lens was warped and the bottom lens was blown off by the heat and blast of the jet exhaust from the forward A4D. The lead balancing weight in the right aileron was partially melted and ran down the underside of the control surface. The damage was not noticed during the launch, and both aircraft completed the flight without difficulty. No unusual flight characteristics were noticed by the pilot; however, airspeeds did not exceed 375 knots during the flight.

Damage resulted from taxiing A4D No. 1 too close behind the forward A4D. The high tailpipe in the A4D limits the distance between operating aircraft on the flight deck. By mutual agreement between the ship and squadron, 25 feet clearance behind A4D aircraft taxiing on the flight deck has been established as a minimum safe interval. Pilots have been so instructed and further instructed to use minimum safe power on the flight deck.

WHEELS-UP SAVES

BOX SCORE

Wheels-up landings, unintentional, pilot-induced

Total number of wheels-up landings Jan to Nov 1957	28
Total number of wheels-up landings Jan to Nov 1958	35

Name	Station	Acft	Date
Allen, S. E., ACC Truesdell, R. J., AC1	NAS Miramar	F3H-2	8-28-58
Lawderback, R., Sgt USMC	MCAF Iwakuni	AD-6	8-13-58
Miller, C. M., AN	NAS Dallas	F9F-6	9-15-58
Kistler, C. R., Corp USMC	MCAS Quantico	AD-4B	9-11-58
Bergeron, D. R., ADJ3	NAS Miramar	F9F-8	9-2-58
Wilhelmi, D. G., AC3	NAS Norfolk	F9F	8-11-58
Latiolais, G. J., ACT3	NAAS Whiting	T-28	9-26-58
Kaempf, M. L., Sgt USMC	NAAS Edenton	A4D-2	10-6-58

BOOT HELL—A HUP-2 was being prepared for a turn-up check prior to a scheduled flight later that day. The aircraft was placed fore and aft on the flight deck.

Permission to start the engine was received from the flight deck officer and the engine was started. About 5 minutes later permission to engage was requested. There was a long delay before permission was received all the way down the line. The plane captain gave the signal to engage, and a turn-up signal was also received from the flight deck bos'n.

The pilot hit the friction switch, then reached for the elapsed time clock to time the engagement. As he looked up, the plane captain was giving a cut signal.

The pilot reached for the friction switch and pulled the rotor brake. The blades had made about 300 degrees of turn from start to complete stop. After the engine was shut down, he stepped out to see what had happened. *A blade on the port side had been left booted and tied to the helo.* As the rotors turned the line came taut and broke about six feet of blade.

The opinion of the pilot was that accidents such as this one could be prevented by brighter coloring of blade boots, plus closer control and accounting of blade boots by both pilot and plane captain.

SLACK—F9F-8 throttle jammed, which prevented retarding below 88% while flying at 15,000 feet in clear weather. Power response was normal between 88% and 100%. Pilot returned to base and declared an emergency. A gradual descent was begun with flaps, gear and dive-brakes extended prior to commencing straight in approach. Touchdown was 500 feet down the runway at 150 knots. Fuel master switch was secured and moderate braking initiated. The hook was dropped after 4,000 feet of landing roll (engine secured) and arresting gear engaged at 80 knots.

Cause of occurrence was that a flat washer on forward side of bolt attaching throttle linkage (part #158206-5) to fuel control was caught in tachometer generator wiring harness. Excessive slack in wiring caused loop in wiring adjacent to fuel control arm at high power setting. Slack in wiring was due to wiring clamps not being positioned properly. All squadron aircraft were inspected and clamps adjusted for proper position to ensure that wiring does not interfere with throttle linkage.

MURPHY'S LAW*

*If an aircraft part can be installed incorrectly, someone will install it that way!

WRONG LOOKED RIGHT

"Murphy's Law" found another victim recently, this time on the HR2S. The FLIGA reports that after the installation of the Lower Attaching Bracket of the rotating scissors, Part No. S-1510-24460, the rotor was engaged. When unusual noise in the rotor head and vibration in the cyclic stick indicated trouble the turn-up was secured.

Investigation revealed that the rotating scissors had sheared, the main transmission cone was cracked, and the rotating star assembly had broken because the lower attaching bracket had been installed *inverted*. The squadron, recognizing that the bracket could be installed incorrectly and still appear correct, cautioned maintenance personnel of this "maintenance trap" and directed that the top portion of the brackets be painted yellow for reference.

The insidious character of "Murphy's Law" was revealed when the bracket which has been incorrectly assembled to the scissors actually *looked correct*. Design symmetry and ease of assembly are factors that can mislead the aircraft mechanic into a "maintenance trap."

Unfortunately, in spite of efforts being made by manufacturers to avoid "Murphy" designs this condition will apparently continue to exist. Therefore, it behooves everyone involved in the maintenance of aircraft to be aware of such possibilities and apply close scrutiny to all work. It is also suggested that functional checks and tests be made following replacement and adjustment of parts as a means of effectively preventing incorrect installations.

Note: The second accident resulting from this cause was reported at press time—Cost of each $13,000!—Ed.

Clipboard

Primary Responsibility

BESIDES the humanitarian reasons for preventing accidents there are two basic reasons why safe flying is essential. These are:

(1) Lost aircraft and dead crews cannot fight and help to win a war; and

(2) Money spent repairing damaged aircraft means less money available for new aircraft and weapons to fight a war.

Remember our service's primary responsibility is to protect and keep our way of life for ourselves and our children.

Accidents are caused by people; they don't just happen. Act accordingly—you can prevent an accident. —*RCAF Waveoff*

Personal Instruction

INSTRUCTING a passenger in the proper use of safety equipment can save his life. You don't have to fly the biggest thing in the world to start worrying about your passengers. Take the pilot of an SNB-5P which swerved and overturned on takeoff and subsequently burned. Before taxiing, he had personally instructed the two passengers in the use of parachute, safety belt and shoulder harness and had made certain that they were properly secured. Thanks to his precautions, no one was injured.

The pilot is not only responsible for the safe operation of his aircraft—he is personally responsible for the safety of each and every passenger.

Aerosol Stowage

THE pressurized packaging (aerosol) of certain products, i.e., shaving cream, insecticides, liquid cleansers, etc., may make such products easier to handle and use, but certainly not easier to store, particularly in aircraft. A recent case proves the point:

A pilot and passenger were en route cross-country in a private plane. They were at an altitude of 3,000 feet, airspeed 140, and just passing over a small community when a loud explosion in the rear of the cabin was heard. Immediately thereafter, the pilot and his passenger detected what they thought was gasoline fumes. Believing the gasoline heater under the rear seat had blown up, the pilot quickly searched out an emergency landing area and came in without damage to the aircraft. Subsequent examination disclosed that a pressure-packed can of ice repellent liquid, some of which had been used earlier on the propeller, had exploded due to the warmth of the cockpit.

With aerosol-type packing so susceptible to heat, extra care is required in stowing such products aboard aircraft.

Professional Approach

"MOST of us need more than we've got if we are to stand out from the pack," is the way he puts it. "Without specialized, technical knowledge we reach a certain level, and after that it takes something extra. For me it was study" . . . *Chief Engineer, General Motors Air Transport Section, in FSF Avia. Mechanics Bul.*

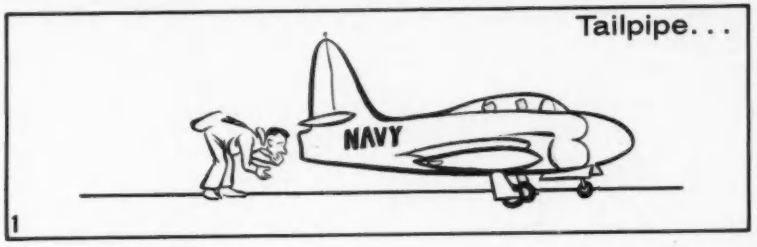
Name Calling

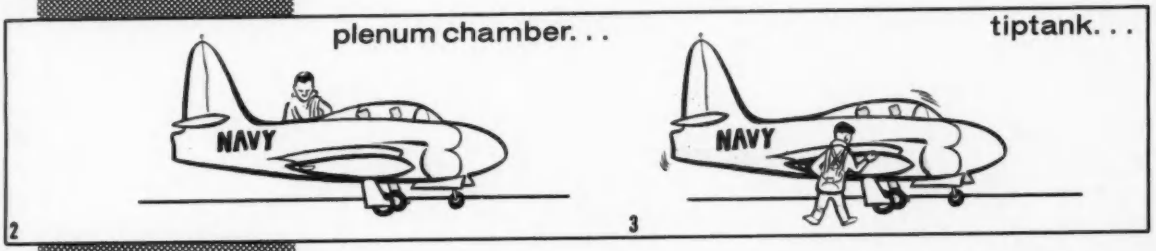
WHENEVER aircraft are operating under a mission name they should stick to the mission name and number if that is the way their clearance reads and not change back to their BuNo. However, if they file with the serial number of the aircraft they should not change to a mission name and number. This type incident, which occurs all too frequently, adds to confusion and in some cases can be a flying safety hazard.—*Flight Service Bulletin.*

Answers to Whiz Quiz, page 31

1. About a dozen! So don't hoard it.
2. The back-pressure, to avoid pulling in water or foreign material.
3. Air temperature is not the determining factor—water temperature of 60°F is generally the dividing line. (See OpNav Inst 3710.7A)
4. In a study of a third of the cases were traced to improper mask fit and dirty or leaky valves. (July '57 APPROACH.) (22 percent malfunctioning regulator, 23 percent separation of quick-disconnect.)
5. Mild chill—slow rewarming. Acute general chill—rapid rewarming of entire body. Frostbite—rapid rewarming of involved part. (Oct 1957 APPROACH)
6. You must also release the chute by hand. It will NOT open automatically after the lap belt has been opened manually.
7. Cases of reported 'contamination' and odd odors have been explained as the fragrance of lipstick or perfume after kissing your wife good-bye; or as rebreathed garlic, left over from last night's dinner.
8. A series of touch-and-go landings. (Oct 57 APPROACH)
9. A decibel is the unit used to measure the loudness of sound; 110-120 of them will cause discomfort in your ears, and hearing loss with prolonged exposure. The 110-120 level is quite common around jets even at low power settings.
10. Wings level, nose UP. This will give you more altitude for seat separation and chute opening. It will also dissipate excess airspeed. "Zoom!"

PREFLIGHT INSPECTION





BACK IN THE HARNESS...

Football players, bridge players, musicians and race horses all have one thing in common with aviators — they must all have a certain amount of "warming up" before going in to play the game for keeps. And if they've been away from the game for a while, if they're a bit out of training from being out of the harness, they warm up in gradually increasing doses. They aren't expected to open up "full bore" the first day they're back in harness!

What about you, when you get back into harness after a holiday leave? Sure, it might have been very restful and relaxing, but it was still a departure from your normal routine. You'll find the harness just a bit strange for a few days.

Even airplanes grow balky and uncooperative after being left out on the line for a week or so. It pays to treat them the same as football players, bridge players, musicians and race horses, with a nice, gentle jog around the local area right after the holidays — see if they've picked up any bad habits while you were back home.

It would pay for you too! Would give you a chance to work yourself back into the game, and sharpen you up, both physically and mentally, for the loft bombing or carqual that demands the full, sharp attention of an aviator who's not "out of training."

Turn now to "Back in the Harness" on page 4 and read about an aviator who had a good leave and was anxious to get back in the harness.

Then turn to "Season's Greetings" on page 26 and read of two who were anxious to get out of harness for a holiday.